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The Architectural Influence of Conquest.

THE influence, upon the indigenous architecture of any country, of the forcible or unavoidable intrusion on the scene of another and stronger people, is a subject of considerable interest, whether in regard to past, present, or future. The phenomenon in one way or another will always be recurring, though in modern times it is likely for the most part to present itself in a different aspect and under different conditions from those under which it took place in former periods of history.

The simplest manner in which conquest makes its influence felt upon architecture, is that in which a strong country subdues a weak one, assumes the government of it, occupies the public offices with men chosen from the ranks of the conquering nation, and more or less establishes a society of the conquering race within the confines of the conquered country. In this crudest and most violent and unmistakable form of conquest, the natural result is the erection by the conquerors of buildings in the style to which they have been accustomed. This was the form which the architectural element took in the case of the people who were pre-eminently the great conquerors of the world's history, the Romans. During a great part of their career their business was conquest, and the mental recreation of a powerful Roman ruler or general was probably that which Shakspeare has ascribed as a habit to Antony,

"Oft, when he mused of taking kingdoms in,"

as if "taking kingdoms in" were a kind of habitual indulgence of his spare time. In the case of the Romans the architecture followed suit with everything else. A subjugated country or province was brought formally under Roman rule, Roman governors were appointed, Roman laws imposed, and Roman architecture was introduced as a natural portion of the whole *régime* of conquest. The reciprocal effect which in other places seems to have taken place between the art of the conquerors, each gaining some part of the character of the other, does not seem to have had much place in connexion with Roman occupation of other countries, except in the one notable case of Greece, which stands apart and comes under a different category, and which must be looked at separately. The Roman remains in various parts of England indicate plainly enough that the buildings erected after conquest and occupation were as purely Roman as if they had been built in Rome. This country, however, was then a barbarian one, and probably had no sort of structures which the Romans could have thought it worth while to take hints from. The temples at Baalbek and elsewhere, however, show the same phenomena of the entire ignoring of everything that was not Roman; the transplanting of Roman art and architecture in its entirety into the newly-acquired country.

The same kind of result attended the Norman conquest of England. The conquerors immediately began to fill the country with those massive structures, built with no stint of material and labour, many of which have out-lasted the Mediæval work of two or three centuries later. In this, as in the Roman conquests, it was the dominion of sheer armed force which gave the ascendancy to the conquering race, and the vanquished people were not probably supposed to have any tastes or predilections worth consulting or studying in any sense. It was their business simply to accept the social and artistic *régime* of the conquerors. The conquest of Greece by Rome was, as we have already suggested, an exceptional case, in which a people of great intellectual culture succumbed to a more powerful nation with a much more complete military organisation. Here the ordinary architectural result of conquest was nearly reversed, for the Romans undoubtedly derived most of their best architectural and artistic development from the nation which they conquered. Even here, however, there was a certain degree of architectural assertion of the dominant race, for the temple of Jupiter Olympius, which was commenced on such a great scale, was not only Roman work, but, in what is now regarded as the complete and typical form of "Corinthian" capital, there first found, we probably see Roman rather than Greek taste; possibly a Roman idea carried out by Greek workmen. One or two very inferior forms of Doric capital to be found in Greece may probably also be traced to the influence of Roman taste working from and deteriorating a model too refined for them to properly appreciate. But in the main the architectural and artistic relation of Greece and Rome is nearly the reverse of that which is commonly found between conquered and conquerors; a result, of course, attributable to the exceptionally high artistic culture of the conquered country in this instance. Pope tried to draw a parallel between this case and that of France and England, in one of his imitations of Horace,—

"We conquer'd France, but felt our captive's charms."*

but with hardly sufficient truth in the facts to give point to the imitation. Both Horace and Pope, it may be said, probably referred more to the literary influence of the conquered country than to the artistic, about which they knew and cared much less; though the point would be stronger, in regard to Greece and Rome, if referred to the artistic influence chiefly.

The most energetic architectural influence, next to that exercised by Rome, was probably that in which Mahommedanism was concerned. The followers of the Prophet were, to the extent of their power, as ingrained invaders as the Romans, though on perhaps somewhat different motives; and their architectural style was pushed, to a great extent, hand in hand with their religious conquests. The *plan* of the mosque they carried everywhere, of course, for that was a *sine quâ non;* and the main and leading qualities of Arabian art permeated the countries into which the Mahommedan conquests had pushed. But the architectural invasion was not so complete as in the case of the Romans. The Mahommedan architecture on new soil had to take as well as give. This was partly, perhaps, that the original style was more pliant and romantic, less logical and unbending, than that of the Romans; also that it came into contact with higher native civilisations in some cases. The penetration of Mahommedanism into the Indian peninsula, for instance, led to the formation of an Indian Saracenic style having decisive qualities of its own, though we do not ourselves feel quite clear that the Saracenic style in India was so much nearer to purely Indian types than to Arabic as to lead necessarily to its being classified with Indian architecture, as our chief historian of architecture has classified it. To our thinking, the Saracenic element is still much stronger than the Indian, in the finest Indo-Saracenic examples of architecture.

India presents us with instances of another phase of the influence of dominant races on architecture, in a less direct and less generally noticeable form. This is to be found in the traces of Greek detail which appear, sometimes in surprisingly literal form, amid the ornamental work of Hindoo and Buddhist architecture. This seems to be the influence of a great style practised by a leading people, spreading itself, in occasional hints and small details, beyond the circle of the immediate influence of the dominant or invading race. On the actual and permanent occupation of a country the conquerors introduce their own architecture; but beyond that range recollections and details are carried further by travellers or wandering artists, and re-appear in the manner in which the Greek detail appears amid Hindoo work. This partial intrusion of the Classic style into the Indian is the more curious because the examples in which it is found, though very ancient, are probably well on this side of the Christian era; some are known to be not earlier than the ninth or tenth centuries, so that we

* Horace, "Græcia capta ferum victorem cepit"; *i.e.*, captured Greece took captive her rough conqueror, — "captivated" him, in fact, to make a play upon words out of it.

have here the last touches of Classic detail lingering in a style quite at variance with the general characteristics of Classic architecture, and after the practice of the parent style on its own ground had quite died out. This process of gradual filtration of style, taking place so slowly, and showing its effects so long after, is very curious; not, of course, without other examples in architectural history.

The other and more recent conquest of India has been followed to a considerable extent by the old result, the introduction of the architecture of the conquerors, in this case, however, not an original style, but one at second hand, or rather two at second hand,—Italian and revived Gothic. Even these, however, have been introduced in very poor form for the most part, inferior even to that in which they were practised in this country; though there seem to have been recent isolated instances of attempts at something superior, in Gothic and Classic both, to the ordinary run of Anglo-Indian architecture. It does not appear, however, that our intrusion with our revived styles has operated entirely to crush out the practice of native architecture, though it is probably tending to do so; just as it appears that the influence of our taste in regard to artistic design generally is intruding itself on the domain of what used to be purely Indian art. There seems, indeed, to be a curious tendency, in these modern times of increased intercommunication, towards a kind of give-and-take process, a tendency to equalisation, like that which occurs between bodies of different temperatures when brought into contact. The case of Japan is the most notable. Our recent increased intercourse with that nation has led to an almost absurd reciprocation of this kind; an admiration on our part of everything Japanese, and an endeavour to get as many Japanese things as possible, and to decorate our dwellings in the same way, accompanied by an endeavour on the part of the Japanese to be as European as possible, to imitate our dress, and, to some extent, our artistic and architectural tastes. The fact is that what is new and unhackneyed to any people will constantly have an attraction for them, sometimes quite out of proportion to its real value. The men who weave the Indian stuffs, and carve the Indian sandal-wood boxes which we admire, do not regard these as triumphs of art, in the sense that we do. It is the way they have always done it, and it would not occur to them to do it otherwise.

To return from what is a slight digression, it may be said that, after all, our appearance in the character of conquerors in India has been marked and commemorated much more by our engineering than our architectural doings, and that it is in these that there would be found the nearest parallel to the Roman influence on the structures in conquered countries which has been before referred to. But there is another kind of conquest in which our race has been very largely concerned, that silent and gradual conquest which consists in the pushing out of a weak people by a commercially and socially stronger one. The colonisation of America is the instance of this permeation of the Anglo-Saxon race on the greatest scale; but here there was no existing civilisation to contend with, nothing but empty country and scattered barbarian inhabitants, so that it does not quite fall under the head we are considering. Even under these circumstances, however, the spread of the usual forms of modern Classic architecture over the new cities of America is a curious fact to contemplate. It might have been thought and hoped that the establishment of representatives of the old race upon new soil, in a country different in climatic conditions from the mother country, and with no existing indigenous architecture for them to copy, might have led to the evolution of a new form of building, or a new treatment of the old forms. But nothing of the sort seems to have been thought of, and when the towns in the States grew in wealth and in scale, the illustrations of their public buildings which were to be met with occasionally might just as well have been new buildings in London or Paris. And so with Australia. The not very strongly-marked types of Renaissance architecture which have been long practised in great part of Europe as the most generally suitable for town buildings, seems to have established a hold on the European mind, and perhaps on the Anglo-Saxon mind more than on any other, and wherever that mind dominates, there it seems, by force of habit, quite apart from much architectural thought, to take its own habitual fashion of building.

This, as we have said, is disappointing in cases where there seems every inducement to originality, offered by new scenes and new climatic conditions. But in the cases of America and Australia there was at least nothing indigenous to turn out or interfere with. There was virgin soil there; no old architecture, no *genius loci*, no associations of any kind. This is different in what may be regarded as one of the latest European intrusions on new ground, the late joint influence in Egypt of France and England, and our recent more paramount influence there. It is difficult to know exactly how to describe our situation there, but as far as the present subject is concerned, it is much the same as a conquest. Partly by a slow train of circumstances, social, political, and commercial,—terminating in a military movement,—we have become the dominant power there, and the effect in relation to architecture is beginning to follow its usual course. But here the case is different from that of America and Australia. The intrusion is made on ground in which, in the cities at least, there is a highly picturesque indigenous architecture, which has been the admiration of European artists for a long time back. This is said to be threatened with gradual abolition, the first stages of which have already been traversed. A letter to a daily paper last week expressed the views of the Society for the Protection of Ancient Buildings on the subject of the projected improvements in Cairo,—projects which, "only arrested by the late political events in Egypt, involved the destruction of entire streets and quarters of the town, which have been laid waste preparatory to the erection of modern buildings debased in style and totally unadapted to the climate of Egypt and to the want of the inhabitants." We are not too much in sympathy with the Society in question, and have learned by experience not to take without reservation statements which are made on the authority of such very excitable people. The Europeanising of Cairo, more or less, is, however, an undeniable possibility, if not probability, and the regret with which many would see the disappearance of the old picturesque city, to be replaced by streets in the fashion of Paris and London, is a feeling with which we should sympathise. The same process is going on in other Oriental towns. We heard the other day from a recent traveller in the East of the modernisation which Damascus is undergoing, and how a considerable part of "the street called Straight" had been rebuilt in European style, and of the great change in the aspect of this and other Eastern cities which five or six years have brought about. It is certainly a vexatious and a melancholy thing that forms of the picturesque, which we had long loved and delighted in, should be getting gradually "improved" away, and the local character of some of the most characteristic of cities should be disappearing. The question is, however, whether in the first instance some portions of the said cities, such as Cairo, do not greatly require demolition, on sanitary grounds; and after that comes the more difficult question, how is it best to rebuild them, and what is the right course to take to guard against the destruction of the architectural beauty of the city? In regard to the first point, we feel no doubt whatever that an impartial examination of such cities as Cairo and Damascus would lead to the conclusion that on sanitary grounds the sooner a considerable portion of them was pulled down and rebuilt the better. It is possible that the necessity for this might not be so much felt by the native inhabitants, who have been long inured to unsanitary conditions of life; but when once a city of this type comes to be largely inhabited by Europeans, its unhealthiness will be felt and recognised, for it seems unquestionable that the sensitiveness of people to unsanitary conditions of life is increased with each generation, when notice has once been systematically directed to it, and people have become accustomed to improved conditions. How are we to meet this state of things, so as to combine due regard to the practical and the picturesque as far as possible? The propositions of the Society aforesaid seem very visionary. They suggest that "the Khedive should be invited to enforce the abandonment of all schemes for the removement [*sic*] of native buildings except in cases that involved danger to the inhabitants, and this should be decided by competent judges." If the competent judges were to be provided by the Society, we presume we should soon see the spectacle of a number of houses only held from actual falling by props "reverently" placed against them; at least, if the Society applied the same principle as they proposed to apply to English cathedrals and churches. Putting aside that, however, and supposing that the decision be made under really competent and impartial judgment, what can be thought, in the present day, of such a proposition for the exercise of "paternal government"? However well-meant, the supposition that this could or would be carried out is literally absurd. The further proposition is that in the case of streets that have been pulled down, but not restored, "native architects" should be employed te rebuild them, under the supervision of "competent Europeans" who had made Arab art their special study, and who would yet "keep in view the requirements of modern civilisation." Now, this might be a feasible solution if there were any people existing such as are implied in the term "native architects," who would work under European supervision in the manner implied; who would supply indigenous art, and take their construction and planning from their European supervisors. Does any such class of men exist in Cairo, for instance? We doubt it very much. But suppose there to be such, and suppose the new buildings carried out under the superintendence of the competent men who had studied Arab art, would not the result be very much of a sham, after all?—an attempt to make the new city look like the old? Part of the charm of Oriental street architecture surely is that it is in one sense not built as "architecture" at all; it is piled together in an unconscious and unpremeditated manner which results in that spontaneous picturesqueness which we all admire, and the loss of which we should all regret. But that is a kind of result which cannot be obtained by a deliberate working up of the thing under the guidance of "eminent men who have studied Arab art." Such a process would only lead to a kind of mock-antique street, which would not have the charm of the old, and would have the practical disadvantage of retaining the methods of construction which are certain to prove so favourable to the prevalence of decay, dirt, disease, and fire. The result would satisfy no one; neither the lover of the picturesque nor the practical house-architect and sanitary engineer.

What, then, is to be done? In the first place, we are entirely with those who discountenance all wanton and unnecessary demolition; but we doubt whether any preventive measures can be directed against the process except that of public opinion. In reference to this, the letter of the Society, and their action otherwise in the matter, although involving a view of the situation which we think chimerical and unpractical, may nevertheless do good in drawing public attention to the subject, and assisting to create a public opinion in regard to it. When the rebuilding is necessary, either because of absolutely unsafe or unsanitary condition of the existing structures, or to meet the wants of an increasing number of European residents (who *will* have, and quite rightly, the comfort and cleanliness which European modes of life have accustomed them to), then the desideratum is that the new buildings should be beautiful and not ugly, and that they should be in a style at least suggesting associations with the locality, and not appearing like a Paris new street thrust bodily into the midst of the Eastern surroundings. This is what we suppose is meant by the complaint that new streets are to be built in a "debased style," an expression which would be quite excusable in that sense, though we rather doubt whether the Society for the Protection of Ancient Buildings do not mean to apply the phrase to any modern architecture whatsoever. But they should remember the proverb about those who live in glass houses, for it is certain that some very "debased" architecture has been built in London and elsewhere from the designs of active members of the Society itself.

Only a general improvement in the architectural ambition and architectural taste of the day can insure us against such merely prosaic treatment of the necessary modern alterations to ancient towns; and that is a matter slow to be developed. It is certainly a subject for congratulation that there are a certain number of persons who feel that the intrusion of ugly buildings, out of harmony with the situation,

into the midst of a picturesque ancient town, is a proceeding to be strongly protested against; and so far we are quite with the Society and their friends. But it is of no use whatever to protest mildly against the removal of old, worn-out, and dangerous streets, or against the gradual Europeanising of many places not originally European, as if the thing were a kind of crime. Old buildings are most interesting things, especially when picturesque into the bargain; but they will not last for ever; the time must come when they are too dilapidated or (if dwelling-houses) too unhealthy to be allowed to remain longer; and what is the use or the sense, in that case, of shrieking out lamentations about the matter, and crying out to have them propped up until the very last moment that they can be held together, we entirely fail to see. And as to the Europeanising of Oriental towns, it is, as we have endeavoured to indicate in our previous remarks on the history of the subject, simply an inevitable result wherever Europeans become the dominant race. It always has been so, it always will be so: the dominant race brings its architecture with it. The increased means of intercommunication is infallibly tending to assimilate, in their customs and tastes, people who were once very distinct in these respects. In the nature of things this tendency must increase rather than diminish; and the nation or race which is most powerful and most enterprising will assert its influence and its tastes more and more widely. If the Society for the Protection of Ancient Buildings can stop the present progress and extension of English political and social influence in Cairo, and persuade us to quit our position there; or, if they can stop the tendency of Oriental potentates and their courts to adopt European habits and costumes, they may then also stop the intrusion of European architecture into Oriental cities, but not till then. The point is to see that the Europeanised architecture be fine of its kind, not commonplace, and not destitute of any reference to the style of its surroundings, as is no doubt the case with some of the architectural intrusions complained of. That is what we have a right to expect, and any criticism or protest directed to that end would have our cordial support, and we may add that a new interest might, in competent hands, be evolved from the endeavours to give to forms of architecture essentially European an expression and colour which would blend them, not harshly, with their Oriental surroundings. But to expect to stop out modern European architecture, in the face of the spread of European influence, or to make ancient Oriental architecture everlasting, is to expect what is impossible.

THE RISKS AND RESPONSIBILITIES OF REVIVED OR REMODELLED STYLE IN ARCHITECTURE.

SOME well-pronounced indications will have been apparent for some time, to the observant of signs and seasons, that architectural taste is disposed to revert to Classical types, to the Greek and Roman forms and details, principles of design and style and treatment of ornament which have long been under eclipse,—partly, it may be, discredited by an unsatisfactory career, but assuredly no little in consequence of the usual fickleness of fashion, fashion which ever becomes impatient when development is tardy, and willingly favours competitive novelties until these also become novel no longer, and prove themselves as disappointing as any they superseded. If Classicism is, indeed, to have a renewed chance, it will be well that the lessons of what was in effect a previous failure should be scanned, and that in aiming at the revival of a style we should recognise what constitutes a healthy revival, a revival which, to be in harmony with nature's universal laws, must also be a development. The successive epochs of architectural development have much analogy to those which are the most interesting subjects of geological speculation. Even in the succession of the systems of rocks where the transition seems least violent, while the geologist loses numerous species, and even entire genera, he ever recognises a limited number of certain survivals, but, together with these, a far larger proportion of types which, specifically distinct as they may be, have all the appearance of being forward steps in development of superseded and obsolete species. The geologist has yet to discover and explain to us what were the changes in the conditions of life which inevitably initiated and promoted these transformations, and in what manner they operated. The architects have not quite so serious a difficulty. They are familiar with changes which do not depend on secular development, and they are witnesses day by day of the mode of working of influences which affect the metamorphoses in which they are interested. The geologist may have to fly to hypothetical modifications of the constituents of the atmosphere, to precession of the equinoxes and reduction or exaggeration of the obliquity of the ecliptic, to contributory impulses from volcanic agency within the earth, or meteoric collisions from without; but the most learned and most candid confesses frankly, if not in despondence, that he is groping in semi-darkness at last. The architect has clear knowledge, in a large number of instances, not only of what types are gone, but how they went,—not only of what old types have been modified, but of what agencies effected the change, and even by what operation of like agencies types have originated from time to time, which, apart from the witness of general and monumental history, might pass for issues of spontaneous creation. The changing necessities of human society form one great class of such agencies,—competent these to originate entirely new types of structure, though, in fact, humanity almost invariably prefers to make a departure from the previously existing, and the previously existing seldom fails to make a record of its claim, by leaving some mark on the new type. Another influence, but which, strictly speaking, may be taken as but another direction of changing necessities, is the requirement by humanity of the stimulus of variety, of novelty. What gives a sense of deep satisfaction to one generation, largely in virtue of coming as a distinct relief from satiety with a certain antecedent excitement, has no such advantage when it addresses that generation's successor. It has become itself the same weariness to the flesh for which it was precisely adapted to administer a remedy before. So it is that between the expansion and variation of architectural requirements from one age to another as matter of simple convenience, and then of æsthetic stimulus and satisfaction, the development of architectural species can always be at least explained, and even sometimes foretold. A more precarious factor is the manifestation from time to time of originating inventive genius.

When revulsion of taste turns architecture back upon a style which has been in vogue aforetime, there are various mistakes which are certain to have some exemplifications,—certain pitfalls into which it must occasionally, and may, too frequently, be betrayed. It may err on the one hand by copying too literally and reproducing slavishly; and on the other no less unhappily by unfettered, but unintelligent adaptation. The beauty of ancient models is a besetting allurement to adopt what seems at once the loyal and the easy course of exact reproduction. Have we not heard the recommendation, "keep to your model,—only adhere to the proportions exhibited in the books, and the work must look well." But even with the best goodwill on the part of our predecessors, this counsel was not to be followed to the letter; as little modification as possible might be admitted, but from the very fact that under the restraint of authority it was not carried far enough, it often sufficed to vitiate all the relations on which the original beauty was dependent, and did not suffice for an effective and consistent substitution. It was under the domination of classical predilections after the first revelation of the perfection of Greek architecture by Stuart and Revett and the Dilettanti Society, that many a country mansion had a tetrastlye portico attached to its principal front, with more or less projection when not actually engaged, but often unrelieved and unsupported by any other classical characteristic of structure or distribution. In the north-west angle of St. James's-square we see such an application of a portico of the Erechtheum to what originally was a nobleman's house. If we consent to overlook the incongruity of a clear absence of organic connexion, we may still be sufficiently offended by a disagreeable *stalkiness* acquired by the columns, in consequence of their being mounted for convenience upon pedestals. The columns themselves are among the best reproductions of Greek columns in London, but forfeit all advantage by this unwary interference with a governing principle in their original distribution.

In an age of advanced culture, when learning is both esteemed and considerably diffused, an artist who shall venture on divergence from an admired and long-accepted model is liable to be denounced for presumptuousness or ignorance in neglecting purity of style; and invention and adaptation alike are, in consequence, inevitably hampered. In extreme cases, and whether Edwardian Gothic or Periclean Greek be in question, no modification either in respect of detail or proportion will be favourably received even if tolerated at all, though a correct taste might give it warranty. The apprehension is then by no means futile lest the most piteous plea of convenience may get no chance of a hearing, when by adherence to the classical model, a design can be secure to rebut all censure triumphantly and override all reclamations on the score of uneasy accommodation or inappropriateness.

The architects of the Roman Empire in its early days stood too much within the awe of the admirable architecture of the Greeks to give fair play to their own originality, and out of deference to the Greeks they faced their vaults and arches with columns bearing vertical strips of entablature, a homage which the Greeks would have ridiculed and despised. But when we get clear of Rome, the centre of culture, we find that a provincial architect, if we should not say builder, did not hold himself bound to such niceties, especially when not only convenience but economy was to be consulted. So it is that we come upon arcades at Pompeii where arches are sprung directly from the capitals of columns without any intermediate foolish segment of entablature intervening. This is the innovation which is so familiar to us in the courtyard of the Palace at Spalatro. It has been extravagantly vaunted here as due to the inspiration of some man of master-mind and original genius,—as a primary and epoch-making revelation of inventive design. It may well be that the distinction and conspicuousness of unusual though not novel arrangement to the architecture of a palace may have assisted its vogue. But in itself it only argues the unceremonious disregard for tradition and polite forms rather than intelligent protest against them, that was natural in the decadence of one system on its way to transformation into another. Associated as it is at Spalatro with coarse and clumsy forms, it belongs to architectural jargon as absolutely as the solecisms of uneducated dialect through which Ciceronian Latin passed into refined and choice Italian. But this process, both for architecture and language, however the world may be congratulated on its results, was but a slow one; and we would fain be spared a tedious endurance of a sequence of barbarisms as the condition of evolving novel refinement from forms which under different circumstances of society it becomes pedantry, if we may not say bigotry, to regard as otherwise than obsolete antiquities.

Progress, therefore, makes demand for no slight exercise of resolution; there is demand also for versatility and gracefulness of invention, if daring innovation is to justify itself. It cannot be said that these elements of success are to be denied in considerable measure to the Italian and French architects of the Renaissance. Still it must be admitted that a large proportion of their works are remarkable for their balanced combination of success and failure, uniting often in the same example timidity and happy boldness in almost equal proportions. When Palladio taxes his ingenuity to reconcile a Classical columnar ordinance with adherence to the general lines of the façade of churches which had been designed harmoniously in a different style, or when the French architect took the unaltered framework of a Gothic church of noble proportions like that of St. Eustache, and redraped it, so to speak, within and without in a costume of Classic details, the result can scarcely escape from again affecting us as a jargon.

It may be that what the well-maintained employment of no inconsiderable endowments and energies has hitherto achieved towards the adaptation of Gothic architecture to modern habits in their secular application, may yield some warnings worth taking to heart by the age, if, indeed, it is bethinking itself as to what restrictions and extensions it will compound for before consenting to redon the proffered robes of Classicism. From the Greeks themselves it will be in the way of gathering rather instruction than warning. The Greek architect was as alert as Shakspeare to accept a sugges-

tion, and took motives of ornament or construction from Assyria or Egypt as freely as Shakspeare took a plot from an Italian novel or transposed into verse a long speech of a Roman from North's "Plutarch." But the transmutation and assimilation was as complete in one case as in the other. No question can be entertained as to the obligation of the columnar systems of the Greeks to the Egyptian colonnades; yet does this imply nothing less than a union of suggestions from a purely stone architecture with others which declare themselves as palpably derived from wooden construction. Even if we leave Egypt out of the question, we trace in the details and members of the Doric entablature a reminiscence of timber construction continued over to a style in which the intervals of columns and breadths of porticos are strictly limited by the ultimate strength of marble beams as compared with those of timber. The same interchange is glaringly manifest in the Lycian tombs, and Fergusson remarks upon it, as in other instances, so in that of the elaborate tester of the tomb of Edward III. How is it that in respect of the Greek instance at least we have no protesting outcry against inconsistency? Why are the denouncers of graining and painting in imitation of wood, or of painting wood at all, not clamorous against what might seem as gross a falsification? The explanation may suffice that while the Greek adaptation had doubtless originally some of the interest of reminiscence, the artists subdued and got rid of this to such on extent that nothing was retained which declared inconsistency with construction in marble, and minor details of mortises and trenails were developed in a purely ornamental sense as mutules and dentils, and the imitative motive was lost in the purely and appropriately decorative.

The difference in question is the same that we are made aware of when we compare such a rug or carpet, as to our grief we are in this century not secure from having to look upon, —flaunting with wreaths and bouquets, nay, with waving ribbons, upon which ingenuity has been exhausted to confer lively relief,—and a carpet from Smyrna or Ispahan, or regions still further remote eastwards from the centres of progressive civilisation. It is not difficult to discern that the decorative forms which enliven the Oriental carpet, may, almost without exception, be traced back to leaves and flowers, nay, even to animals, but the forms are subdued to the proprieties of their employment upon a surface which is required to be flat, and to express flatness above all things; and where their derivation is recognisable at all, it is but as a vague reminiscence.

To those who are willing to take advantage of the principle which is here illustrated, it may be conceded that the design of a modern dining-room may possibly be under fair obligations to a Gothic chapel, but then only under the further obligation, if that be possible, that it shall not look more like a Gothic chapel than a dining-room; that, indeed, it shall not look like a chapel at all. It does not appear how such a countersense is more venial than building a chapel in such a style, and with such details as to suggest infallibly, that it was intended to be, and actually had once been, habitually occupied as a dining-room. The time has happily been left behind when the construction of artificial picturesque ruins was in vogue. An example remains no further off than the vicinity of Virginia Water; and such mock Classic ruins are to be found in gardens which command a not very remote view of the imposing realities of Ancient Rome. The mock Gothic ruins that we occasionally come upon in England, are not of recent date,—at least within our experience. Still it is but one step removed from such absurdity (and is not that step indeed taken in the direction of still deeper absurdity?) to build up modern structures which bear so little impress of their actual date,—of the special characteristics of their proper epoch,—as to have still more that is mock about them than the much-derided mock ruins; to be only able to evade imputations of forgery and falsifications by appeal to the notoriety which precludes imposture, by admission that they pretend to no more than to stimulate archæological interest by presenting modernism in masquerade.

And even masquerade is only endurable when sufficient tact and cleverness are concerned to maintain deportment in keeping with the assumed character and costume. It can be but with pain and reluctance that we find a sumptuous structure remind us of the satirist of the Rosciad,—make us feel that when dignity of one class, however lofty, is confounded with the dignity, however in itself venerable, of another, the result at last is no more dignified than is achieved at the other extremity of the gamut by the low comedian in genteel comedy:—

> "When blindly thwarting nature's stubborn plan,
> He treads the stage, by way of gentleman,
> The clown, who no one touch of breeding knows,
> Looks like Tom Errand dress'd in Clincher's clothes.
> Fond of his dress, fond of his person grown,
> Laugh'd at by all, and to himself unknown,
> From side to side he struts, he smiles, he prates,
> And seems to wonder what's become of Yates."

The incongruity which is laughable when the clown attempts the airs of the man of fashion is likely to be offensive when a sacred or even a purely ecclesiastical style has force put upon it to adapt it for a disguise for simple and secular purposes; or when the gravest and most deliberate functions of a city at peace are housed behind a screen which betokens defiance of an expected assault by main force or contemptuous disregard for civil rights, or any arguments but those conveyed by the hardest hitter. The difficulty of adaptation on the side of Greek models may not unnaturally seem to lie in the fact that the types of which we are in possession are all but exclusively temples; and neither private houses nor public institutions and palatial courts ought to look like temples of heathen gods any more than like Mediæval or modern monasteries, churches, and cathedrals. The adoption of even a modified form of Greek architecture is no doubt likely to go astray through the same misconceptions which beset the fair enthusiasts who believe they see a way to doing better justice to their charms by reverting to Greek costume. The conditions of success, it may be hinted,—(that the beauty of the moderns as unadorned is at no disadvantage, we conscientiously believe),—seem to require the Greek climate, the ancient Greek climate, for the experiment, and the adoption of Greek habits of domestic life. But, in fact, the models of Greek dress that they rely on are as insufficient if not illusory as those of Greek architecture. Spartan girlhood was, no doubt, arrayed with a simplicity that was prescribed by the legislation of the semi-mythical Lycurgus, and was persevered in to be carped at, not merely by Attic comedians, but in tragedy by Euripides. But even the agitators for the "divided skirt" do not talk or dream of adopting it on the uncompromising lines of the fashion-book of Lycurgus. Something more available is seen in the graceful costume of the girls of the Panathenaic procession, who doubtless represent the daughters of the best Athenian families; but their costumes are no more to be taken as to what Athenian fashion accepted for the height of elegance than that of the typical *ingénue* of French comedy for the exhaustion of the resources of Mr. Worth. Homer, it is true, has no weakness to charge against the matrons of Troy beyond a fondness for a trailing peplus; but Hesiod, speaking as amidst a far simpler social state, bestows a plain-spoken contemptuously descriptive epithet upon the adopters of the dress-improver or crinolette of his day. In fact, the Greek female dress from vase paintings and bas-reliefs no more vouches for every-day realities than the scanty equipment of the horsemen of Phidias is proof that Xenophon as a cavalry officer was heroically independent of equivalents of corduroys or pig's-skin. The richness of the Greek vocabulary lets out the secret. Less than the learning and ingenuity of Porson,—the translator into Greek verse of "There lived a Man in Thessaly," —would reproduce in authentic Hellenism most of the items in a modern fine lady's Christmas account for dressmaking, and hairdressing also.

It is probable that if we had plan, elevation, and sections of that house of Alcibiades which the son of Clinias audaciously compelled the leading painter of the day to decorate, we should have reason to admire the versatility of resource of the Greek architect, and be able to rebut by example that imputation of inflexibleness as compared with Gothic, which, even as matters stand, is by no means justified.

Bilateral symmetry declares itself predominant in a Gothic abbey or cathedral as absolutely as in a Greek temple. Westminster Abbey and the Parthenon cleft through their roof ridges from end to end divide alike into as accurately answering halves as any of the superior vertebrates. One remarkable and most important unsymmetrical Greek building we have, the Erechtheum, which is doubtless on the site and probably retains some lines of a primæval prototype. Homer speaks of the goddess Athene retiring to Athens and "entering the well-closed house of Erechtheus," and curiously we have in this building the variety of ground-plan which is usual and natural for a moderate house, floors upon different levels, internal stairs, free omission of a member of entablature, and windows disposed for a liberal admission of light. From all antiquity we have received nothing so modern in character and in suitability for modern requirements as the windows of the western front of the Erechtheum. As compared with these, the Gothic window in all its modifications is vexatiously unmanageable; even when one of its forms is adopted which admits of a rectangular head, both outlook and inlet of light have to renounce claims to consideration in deference to blocking mullions and obstructive tracery precisely where such features can be most undesirably obstructive. If an earlier style has the fortune of preferment, it must submit to the humiliation of being crowned by a falsified arch and standing forward as a vain pretence with a mocking sash-window behind it. When extensive buildings are required for the transaction of secular business daily and from day's end to day's end, business involving, as all business now does, continued reading, writing, reference, by men deeply engrossed and sedentary, the spirit of Gothic architecture in the interest of its own dignity may protest against being employed inappropriately and invidiously. What else is the case when it can only indulge its predilection for window spaces so exaggerated that they seem to enclose a lantern, at the cost of provoking protests from the occupants that they are starved with cold; while if ecclesiastical style is renounced for that of the Mediæval fortress, and wall space is made predominant, and light is admitted through the openings which sufficed the beleaguered baron for observation and annoyance of his enemies, an outcry as loud is raised against condemnation to darkness.

If a Classic revival is to hold its own it must lay its account, when it seeks for reception in the heart of great cities, with the necessity for regard to economy both of space and resources. If the growing wealth of the world gives marvellous extension to resources of money and material, the requirements demanded from them seem likely to keep step; while the pressure of business around certain centres tends ever to restrict available area. When breadth is limited there is no excuse for wasting opportunities in the directions of height and depth. Classic and Gothic are both bound,—one not more than the other,—to make the most of the very lowest stories by roominess, access, and, above all, by that full security for ventilation and light which will entail the renunciation,—whatever the pang it may cost,—of some cumbrous as well as costly architectural elaboration. As regards economy of height, the Classic style, with horizontal ceilings, is so far adapted for allowing the very utmost available cubic contents of air for an apartment; the Gothic style, it is true, does not forfeit the same opportunity, and even a stately hall may, especially in England, consistently with the style, be covered by a framed wooden roof. But against the open opportunity for the practice of a virtue is to be set the exposure to temptation to neglect it. Who is there who, even against his better judgment, is not conscious of tenderness for the practitioner of Gothic architecture who does not fail to seize a chance when he gets it to indulge, whether in keeping with an occasion or out of keeping, in a revel of high-pitched arches and a stone vault? The Classic architect has his temptations also, but when he yields to them let us hope that it will not be to the effect of a parallel to enhanced expenditure on foundations and abutments to the tune of tens of thousands of pounds for the sake of what at last it is only from a tenderness that will be well understood, as well as from the value that critics set on their own good humour when all the world is anxious to be pleased, that they abstain from denouncing more pointedly as too neglectful of the responsibilities which are incumbent on revivers of an ancient style.

The Longfellow Memorial.—Mr. Brock, A.R.A., has been selected to execute the bust of the poet Longfellow intended to be placed in Westminster Abbey.

EARTHEN MONOLITHS.

NEW LIGHT ON THE MOST ANCIENT ARCHITECTURE.

IN an interesting, though brief, letter printed in a morning journal, Dr. Schliemann administers a vigorous rebuff to the ill-natured assertions, made behind his back, in depreciation of his recent explorative work. He promises to the world shortly, through the publishing machinery of Mr. Murray, a full account of further and important discoveries.

It cannot be too strongly insisted on that, although the wish to discover and identify the remains of the very Troy of the "Iliad" has been the mainspring of Dr. Schliemann's energetic toil, the value of his discoveries is entirely independent of theory. The city sung by Homer may have been as much an imaginative scene as the Pandemonium of Milton, and yet the seven cities (or whatever may finally be determined to be the correct number) successively raised on the hill of Hissarlik were past realities, of which the great German explorer has been the first to unveil the scorched and buried relics. In matters of science it frequently, perhaps most frequently, is the case, that the most brilliant discoveries are made during the pursuit of something quite different, and probably of minor importance. It is as if a man started in chase of a hare and brought home a buck of the first order. In Dr. Schliemann's letter mention is made of a discovery which (if sustained on investigation) may throw more light on the unwritten history of mankind than the identification of any individual site, be it that of the Temple of Olympia or the Pergamos of Troy; and we the less besitate to call attention to this first whisper from the indefatigable explorer, for the reason that it instantly awoke in our own memory certain faint and subdued echoes of similar tidings from other regions. By promptly directing the attention of those more familiar than other people with the localities to which we have to advert, we may at once stimulate Dr. Schliemann himself to devote a more critical attention to a new subject of quest, and hasten the accumulation of such evidence as may be already accessible in support of his new hypothesis.

In prosecuting his researches on the site of the buried cities, Dr. Schliemann has come to the conclusion that the antæ of the Greek orders are, so to speak, survivals of an ancient form of buttress, of primary structural importance. How closely the Doctor connects this hypothesis with a still more striking statement, is not quite clear to our mind. But however this may be, there can be no doubt that the second discovery to which we advert is of the highest interest. It is to the effect that the walls of at least one of the buried cities were built of unburned bricks, and that on the completion of the wall its face was baked, or vitrified, by the means of enormous fires kindled at the foot. It may thus turn out that features which have been hitherto regarded as evidence of destructive siege or storm, have been due to the special defensive industry of the early builders.

We mention this with the less hesitation, on the ground that the theory may account for some hitherto unexplained facts in other parts of the world. In the first place, we refer to the western coasts of Scotland. We do so with some hesitation, because, although our information is derived from a man whose name ranks very high among living archæological discoverers, we have neither seen one of the objects of which he has told us, nor can refer to any work in which any of them are described. We turned in vain to Mr. Anderson's valuable work entitled "Scotland in Early Christian Times," with the hope of finding in it, or in its quotations from Dr. Petrie's "Essay on the Origin and Uses of the Round Towers of Holland," any distinct reference to brick or earthen towers. We hope that some of our archæological readers may be able to give the information we seek. The account given to us is, that in various points on the western coast of Scotland, exist towers of some sort of earthen construction, which appear to have been vitrified *in situ*. They are attributed to the Picts.

In the cradle of early empire, again, we have a trace of the same class of phenomena, in a building, in one peculiarity of which this discovery of Dr. Schliemann is the first thing that has thrown any single ray of light. The vast pile called the Birs Nimrud is one of the most imposing ruins in the world. It unites the mystery of legend or poetry to the hard facts of archæological relic even more remarkably than do the excavations at Hissarlik. For the Birs Nimrud is locally held by common tradition to be the Tower of Babel of the Book of Genesis. It is situated within the limits of Borsippa,—which city had about the same relation to Babylon that Buda bears to Pesth. It is described by Sir Henry Rawlinson, as quoted in "Assyrian Discoveries, by George Smith" (p. 59), as the remains of a ziggurrat or tower, built in seven stages. Of these, the lowest is 272 ft. square, and 26 ft. high, the second 230 ft. square, the third 188 ft. square, each of the same height of 26 ft., while the fourth stage was 146 ft. square, and 15 ft. high. Inscribed cylinders were found in receptacles in the corner of one of these stages, stating that the building was the Temple of the Seven Planets, built by an early king of Babylon and restored by Nebuchadnezzar. The point where this ruin illustrates the question before us is this,—at the top of the rude pyramid or cone to which this staged edifice is now reduced, stands a solid mass of vitrified brick. Now we know well that in the time of Nebuchadnezzar, and for a long antecedent period, it was the custom of the Mesopotamian builders to employ, at all events in their exterior work, moulded and burned bricks, laid in bitumen. This is the structure of the Tower of Babel, according to the Pentateuch, "And they said one to another, Go to, let us make brick, and burn them throughly. And they had brick for stone, and slime had they for morter" (Gen. xi. 3). The חֵמָר of the Hebrew text, translated "slime" is a cognate word to the חֹמֶר, translated "morter," and no doubt refers to the bitumen which was used as a cement in Babylonia as far back as the earliest stamped bricks, or to almost the date of the fifth dynasty of Egypt. The root of the word means "brown," and is thus applicable to bitumen. A wall thus built could not, we apprehend, by any means be subsequently vitrified as a mass. The bitumen would consume and escape, and ruin, not consolidation, would be the result of the application of intense heat.

It thus really looks as if, in the buried walls of Hissarlik, in the vitrified Pictish towns, and in the upper stories of the Temple of the Seven Planets at Babylon, the plan of torrifying or vitrifying a structure of previously unburned clay had been adopted with the view of giving an eternal durability to a building of that material which, in point of fact, has proved to be the best of all fitted to resist the tooth of time. The hypothesis may seem bold, but we can see no other that will account for the fact. At all events, regarded at present as pure hypothesis, and as linking in the statement of a single problem the prehistoric work of Scotland, of Asia Minor, and of Mesopotamia, it cannot be denied that the subject is one deserving the anxious study of the architect as well as of the archæologist.

It is with no idea of criticising a letter, written, perhaps, in haste, at Athens to a London journal, that we call attention to a hiatus in the statement of Dr. Schliemann, which he will no doubt be glad of this hint to fill up. We write rather with the view of calling the attention of that great discoverer to the fact that matters which may appear to him on the ground to be indubitable, have to be introduced with some sort of preface to the world. The doctor says, "Nothing could better prove the great antiquity of these buildings than the fact that they were built of unbaked bricks, and that the walls had been baked *in situ* by huge masses of wood, piled up on both sides of each wall, and kindled simultaneously. . . . . I lay stress upon the fact that a similar process of baking entire walls has never yet been discovered."

But as far as we can yet gather, what has been discovered is not a process, but a fact. Admitting, with every necessary reserve, that the appearance of the great wall of the ancient Acropolis of the second city reared on the hill of Hissarlik is such as to intimate that it was built of unbaked or sun-dried bricks, and afterwards subjected to intense heat, we should like to know on what ground Dr. Schliemann has come to the conclusion that this was effected by means of masses of wood piled upon both sides of each wall, and "kindled simultaneously." Not that such is by any means improbable. On the contrary, it is a proceedure very natural to imagine; the only doubt being whether the heat thus given by enormous bonfires would have been enough to produce the effect, or whether we may not rather inquire into the probability of the use of some bituminous fuel, as giving a more intense heat. As to this, however, we do not see how any direct evidence is to be obtained. And the point which we are desirous to bring before the attention of the learned explorer is, that in his forthcoming work he, in the first place, should give us such a clear description of the actual state of these whole-burned walls as shall leave no doubt as to the facts; and that then any opinion that he may form as to the character of the process adopted be stated as opinion, accompanied by the reasons for the same. Dr. Schliemann owes it to his own distinguished reputation to avoid the fatal error into which so many of his precursors have fallen,—that of omitting to distinguish between the important facts which they may have been the first to bring to light, and their own explanation of, or deduction from, these facts. We freely admit that the opinion of the discoverer is entitled, *primâ facie*, to the highest respect. We are but too keenly aware of the annoyance which is experienced by a man, who has given years of study to a subject, when he finds his statements pertly questioned, or still more pertly "completed," by critics who have not advanced beyond the alphabet of the research of which the explorer is writing the grammar. But all the more does the discoverer need to put that check on his natural eagerness which shall first leave his discoveries clear and undisputable, visible in their own light, and then enable the inferences drawn to start from a definite and incontrovertible basis.

We are not sure that we altogether follow the line of thought indicated by the remarks as to the *antæ* or *parastedes* of the ancient Trojan temples. "Each of the front faces of the lateral walls," says the explorer, "is provided with six vertical quadrangular beams, which stood on well-polished bases, the lower part of which was preserved, though, of course, in a calcined state." Here, again, it is difficult to follow the argument without some aid from the draughtsman. We want to be told something about the "well-polished bases." Of what were they made? and what is the evidence of the polish? But what seems to us here to be of most importance in order to appreciate the full value of these curious discoveries, is a section of the ground. Dr. Schliemann says that the *antæ*, "which in later Hellenic temples fulfilled only a technical purpose, served here as an important element of construction, for they were intended to protect the wall ends, and to render them capable of supporting the ponderous weight of the superincumbent cross beams and the terrace." Here it is that the question of level comes in. If there be indicated the former existence of these four-roofed areas or terraces in front of the main temple walls, it would seem to us as if the structure must have somewhat resembled that of the Royal Palace at Naples, where the sea elevation rises from the back of a terraced garden. It is hardly to be supposed that four flat-roofed chambers stood open to view on the four sides of the temple. On the other hand, the introduction of such an arrangement, whether partially subterranean, as we suggest, or forming a part of the visible elevation, as Dr. Schliemann appears to consider, seems to show a very decided degree of architectural art and skill among the builders of the edifice in question. And the very early date which, on the theory of the successive cities, must be attributed to the building, adds to the great interest of the inquiry.

Dr. Schliemann is of opinion that "the *antæ* in the Hellenic temples are nothing else than reminiscences of the wooden *antæ* of old, which were of important constructive use." We take it that there is little doubt that the general forms of Greek architecture are taken from early wooden structures, and that pilasters, when retained merely as ornaments, are the survivals and representatives of wooden uprights, between which, as building advanced, partitions of walls of less strength and solidity were introduced. But we do not see that the connexion with these projecting chambers or terraces is quite so obvious.

It may be observed that the transition from the megalithic work which reaches back to prehistoric times, and which comes down to the date of the Idumean dynasty in Palestine, and of the Roman rule in Baalbec, to the minute

mosaic of brickwork, is one of no slight character. It is one which cannot have been taken at a stride, although hitherto we have found no indications of the mode in which the gap was bridged. There is little doubt that the *ratio entis* of megalithic work was ignorance of the quality of cement. When it was discovered that one stone could be attached to another by other means than the mere pressure of its own weight, the use of smaller, more economical, and less costly blocks became common. And thus we come down from the Cyclopean walls of Mycenæ or Tiryns to the rubble work of our railway bridges. But where the first use of bricks may be interpolated in their long structural series, as yet we are not aware. Far more accordant would it be, we may conclude, with the architectural ideas of the megalithic and cementless builders, to preserve by one homogeneous vitrified glaze an earthen building, than to depend on piling together hard-burned bricks without cement. We can have little doubt that the Cyclopean work, and probably most of the other megalithic work of antiquity, was erected previously to the knowledge, or, at all events, to the common use of cement, although mortar is to be found in the Great Pyramid. But if cement were unknown for stone, it would also be unknown for bricks. We therefore doubt the use of burned bricks before the time (however remote) when the use of a cement of some kind first formed a part of the resources of the architect. As far as the authority of the ancient and venerable sentence that we have above cited goes, building in brick was an imitation of building in stone. How was it, then, when stone was used in enormous masses? We know that great use was made in Mesopotamia of bricks baked in the sun. How was this work faced? Our recent remarks on clay as a material for foundations are germane to the subject. That a mass of this dried brick may have been faced and lined, either with stone or with kiln-burned bricks, we think Eastern research has shown. How far these structures would be so homogeneous in their resistance to pressure as to be durable, we are unable to say. But we cannot doubt that, — with that disregard of expense which characterised the mighty builders of Egypt, of Assyria, and of Babylonia, a monocaust or whole-burned building, so to say, might have appeared even more likely to be durable than a structure articulated of stone. The subject is new,—the facts as yet collected are few. But Dr. Schliemann's letter has given indication of at least the possibility of the opening of an entirely new chapter in the history of ancient architecture.

We trust that these remarks, reaching the great explorer in his Athenian home, may at the same time assure him of the kindly and eager interest with which his further tidings are awaited amongst his English friends, and remind him how necessary it is, even in writing for a sympathetic and educated public, to take no leaps or bounds in his statements. In the description of wholly new discoveries, the motto, *Natura non facit saltum*, must be ever kept in view,—whether as a guide to theory, or as a maxim of literary composition. We are anxious that Dr. Schliemann should himself do justice to his own discoveries. And we say this all the more strongly from our own opinion that their magnitude and value are so great that it is difficult, within the limits of a fit literary reticence, to do justice to them all.

THREE GERMAN INDUSTRIAL MUSEUMS.

Shakspeare seems to have had either a presentiment of the present rage for decoration, or, perhaps, like many others, have been bored by its discussion, when he makes Bassanio remark on the facility with which "the world is still deceived by ornament;" and in the present day, when industrial museums are springing up not only in the great capitals of Europe, but in America, nearly all of which appear to devote their greatest exertion to the decorative part of industry, it appears that the future will be not a little overburdened with what just now, in the estimation of severe critics, is after all but very questionable ornament.

Judging by the extraordinary revival of what may be called the modern rococo art displayed this season, not alone at home, but abroad, in the many shop-windows devoted to articles useful or not, and all over and uselessly decorated, it seems to be the received opinion of manufacturers, and those who lead them, that too much ornamentation or useless elaboration of scrolls and would-be decorative motives, cannot be too freely displayed on every object produced. Whether our museums are to answer for this it is not easy to determine, but certain it is that when one visits, as so many of us now have the opportunity of doing, any of the recently-created "industrial art museums," such as South Kensington Museum, the Musée des Arts Décoratifs at Paris,—where a Government lottery is now on foot for the formation of a museum to rival our South Kensington,—the newly-opened Kunst-Gewerbe Museum at Berlin, those at Dresden, at Vienna, at Nuremberg, and elsewhere, when we come upon a modern piece of work we are disposed to give our admiration to little further than its skilful and mechanical, —though often manipulative construction,— while it is as rarely that we find in any of what are ancient works that there is anything to complain of either in construction or design. That the causes of all this have been explained, our columns bear ample evidence, but never have we depreciated the advantage to be obtained by the formation of decorative collections, and the immediate means of comparison afforded by the juxtaposition of the old and the new.

When but a few weeks ago the Crown Princess of Germany opened at Berlin the magnificent Museum of Industrial Arts which now adorns the capital of the German Empire, she was but following with very sincere reverence in the footsteps of her father, the Prince Consort, to whom the world owes, in the formation of the South Kensington Museum, the numerous collections and schools of art that have since 1851 sprung up in so many quarters. Amongst these museums, "the South Kensington" will always retain the highest position, though much is to be said in favour of the scientific commencement made at the Berlin Museum.

The directors of the South Kensington Museum cannot, we feel sure, but be embarrassed by a warm emulative desire in visiting the recently-opened German Industrial Museum. It is difficult to describe, without occupying considerable space, the system on which the collection is brought together. If, soon after passing the grandiose entrance into the central hall, the visitor is struck by a certain resemblance to our own institution in Cromwell-road, the series of rooms which on the first floor open on to the central hall recall so successfully a highly systematised Cluny Museum that it is evident the designer has endeavoured, as far as lay within his power, to bring to Berlin something of the charm that all lovers of the beautiful art of the past have felt on visiting the old museum built in the Roman Baths of Julian. It is, indeed, to the enthusiasm of such collectors as Du Sommerard, the founder of the Cluny, such men as Sauvageot, as Soulages, as Bernal Osborne, as the late Mr. John Jones, and many others, that we owe a debt of gratitude for the preservation of such treasures as now crowd our museums, treasures alone accessible in the past to the wealthiest, or shut up in great palaces abroad, where they were hastily visited by generations of wandering and wondering travellers. Now, however, the nation possesses similar gatherings for the education of the public, and the value of these collections, not alone as objects of pride, but as educational institutions, is at length being fully appreciated.

At Berlin, under royal patronage, the new Industrial Art Museum is, as one would expect from so thorough a nation of experts, a model of order, and if the collection is far from possessing the quantity of treasures that the South Kensington Museum shows, it cannot be said that there is noticeable any deficiency in the manner in which every object is duly presented to the public. There is something peculiarly instructive, — beyond the pleasure afforded,—in the cheerful domestic manner in which the more precious objects are exhibited in the rooms on the first floor; the severity of museum arrangement seems robbed of its chilling character; indeed, so successful is the general effect produced that we sincerely hope the South Kensington authorities in the new buildings they are now so actively preparing for the reception of the overcrowded collections, will not fail to take a hint from the ingenious mode in which the Berlin Museum directors have, as we have above remarked, obtained something of the domesticity of the Cluny Museum. Of the thirty-seven separate rooms and their well-organised contents we must forbear to speak in any detail; as far as lay within the power of the directors, the various products of the industrial art of the past have been grouped together; suffice it to say that it is gratifying to find our own South Kensington Museum so rich in every department represented at Berlin,* a fact which, to a great extent, is constantly recurring to the properly grateful mind in examining the great Continental collections. In years gone by foreign travel was, with most, the sole means of obtaining an acquaintance with objects that now, thanks to our Science and Art Department, can be calmly studied at home. Of what use this mere *dilettante* knowledge may be it is not easy to decide, unless it serves to render us more critical, or, perhaps, what is more to the point, more lenient from a knowledge of the difficulties. From a practical point of view, however, this is not the aim of the promoters of the existing industrial art museums. Their object is the formation of artists and artisans capable of producing work that may vie with that of the past, to revive the lost traditions which guided the workers of those days, and to present to the rising generation of artists and artisans the best examples from which to re-model the lost traditions. These aims the Berlin authorities are endeavouring as far as lies within their power to attain; the new museum, in addition to its collections, possesses a constantly increasing library and a school organised on the most approved modern principles. The new museum has before it a brilliant future in a city,—in a nation, indeed,—which is daily gaining a greater hold by its industry on the markets of the world. That industry, however, the authorities admit to be in want of improvement, and having set themselves to the task, we must now wait till the final results crown the work, and come to show after a reasonable lapse of time whether the efforts of our leaders in these matters justify further advance or modification.

The Industrial Museum at Dresden is a very different institution to that at Berlin, though aiming at the same results. It is, in comparison with its more showy rival, essentially a working affair, established on its foundation, some six years ago, in the old Polytechnic School. Nothing, indeed, could be more practical than the Dresden institution, arranged with the most skilful regard to every requirement, by its earnest director, Herr Graff, who has gathered together within an incredibly short time a most invaluable collection of objects suitable for his purpose. Here we have no unnecessary show: a few representative specimens of each branch of industry, with a special importance given to the department of tissues, the collection of which, if our memory serves us (we stand under correction), must equal in completeness the famous collection at the Germanic National Museum at Nuremberg.† Under his direction, Professor Graff has a large school of pupils, among whom is opened a competition for the design of any object required by the manufacturer who may apply to the Museum. Plainly exhibited in glazed frames is a rich series of pieces of drapery, some mere scraps, while in the desks and cupboards, for purposes of reference, are literally stacked away, on stretchers, hundreds of other examples of every period and country. The pupils, therefore, have a rich mine of suggestive study, intended entirely for their use, the public being admitted by courtesy, much as one is to the Mint or a great printing-office, where the real business is the work of the establishment, not the show. Professor Graff will in time, doubtless, have the room he requires to make his institution as pleasant a lounge as at present the museums of Paris, of London, and Berlin are made; in the meantime he has merely contented himself with the higher object of making his museum practical. In the city of such a gathering as the "Grünes Gewölbe," this is little inducement to the ordinary public, and yet how much more is to be profitably learned from a visit to Professor Graff's modest institution in the Antons Platz than from the two hours' obligatory ramble through the wealth of rococo *bric-à-brac* and

* Except, of course, in the rich china and porcelain collection,—which, with us, is shown at the Museum of Economic Geology,—and the rare Schliemann collections of Trojan antiquities.

† The collection of tissues owned by Dr. Bock, now on view at the South Kensington Museum, is but the nucleus of a collection such as that at Dresden, at Munich, or Nuremberg.

Electoral barley-sugar-work of "the green vaults" in the Royal Schloss!

At Vienna, the Industrial Art Museum may be said to differ in some respects from other similar institutions in the importance assigned to the products of modern manufacture. The building, consisting of the museum, a library, and the school, was specially erected some years since, and forms one of the architectural features of "The Ring." The collection proper is interesting, one of its attractions being the Mediæval Guelph treasure which belonged to the Duke of Cumberland. The collection of china, like that at Berlin, is rich; the objects of *bric-à-brac*, if good in quality, are, however, sadly wanting in quantity. The rest of the museum is largely taken up by modern work,—a feature worthy of observation, as it is a point, it strikes us, which of late years has been too much overlooked at the South Kensington Museum,—the easy and ready means of comparison between the fine true art of the past and the modern results of its study. With this view, in Vienna a very large space, consisting of many rooms, has been placed at the disposal of the manufacturers and artists, for the purpose of displaying the last-elaborated products of their various shops; and although this portion of the exhibition is naturally the least interesting to the amateur, the antiquary, or the would-be critic, it is without doubt instructive to the artist and the practical workman; not but what these modern exhibits have the effect of depressing the lover of beautiful art who desires to produce something in emulation of the old, if he is to regard the work here displayed as that which the purchasing public are determined to demand,—if, indeed, cheapness and mere display, largeness, and apparent cost, are to be regarded as the highest aim of his exertions. Indeed, a great portion of the Vienna Industrial Art Museum resembles very much the Austrian annexe of one of our recent International Exhibitions, filled, as it is, with cases of artificial flowers, paste jewelry, cut glass, cutlery, specimens of bookbinding, leather work, enamel, furniture, and ironwork,—everything very suggestive of the sad necessity for a proper direction being given to the local industrial arts. The Viennese workmen are skilful, and their designers skilful also, perhaps only too much so, judging by the results produced. Their art, however, we suspect,—as is so often the case,—is only representative of the general life of the Austrian capital, and that no museum can materially alter. Alarm at foreign competition is, however, being expressed, and only a few days ago, at a meeting of the bronze-workers in Vienna, where this branch of industry holds an important position, a unanimous resolution was passed as to the necessity,—in face of the increasing activity of the industrial museums of London, Paris, and Berlin,—of forming a special school for the education of bronze-workers. The cry has not come too soon; the exuberance of the Viennese designers requires somewhat toning down. Their existing industrial museum does not contain a sufficient number of examples of works of art of the past, to show the Viennese artists and workmen the extreme modesty and sobriety that in the periods worthy of study invariably marked the productions of what we have now come to understand as the industrial arts, which, aided by the daily growing influences of free trade, are taking so important a position in the commercial markets of the world.

FLATS AT HOME AND ABROAD.

THE question of house-rent is one that daily presses more and more heavily on all sections of the community, not alone at home, but abroad. At home, however, we are almost inclined to believe that the difficulty is greater, because it is, we cannot help feeling, less seriously grappled with than it is on the Continent, where, as with us, the great cities are daily growing in size, and, under the centralising influences of modern civilisation, the country population is pouring in in increasing numbers. We feel justified in our view that on the Continent the question of house-rent is more seriously grappled with than with us, on the score not only that the means provided abroad for housing the population tends yearly to increase the beauty, the splendour, and the sanitary condition of the great capitals, a point which, in the speculative greed of too many builders, is with us overlooked, but on the score also that the great consideration of an easy rent for a pleasant home conveniently near the business and other centres is more successfully satisfied than with us.

It can easily be guessed by any one familiar with the Continent, or, for the matter of that, familiar with Edinburgh, what is the means which can alone satisfy these demands,—building in flats,—a system which has for centuries prevailed abroad, and is only slowly and very imperfectly being introduced into our country. When, however, one sees this system fully and unhesitatingly adopted and continued in Paris, Brussels, Berlin, Rome, and Vienna, and now very largely in New York, all question of its adaptability to modern uses is, we consider, set aside. The foreign "flat," be it *appartement*, *quartier*, *wohnung*, or what not, is singularly the same all over the Continent, and, whether large or small, will be found only a variation, to suit various purses, of the same requirements, and very skilfully are these requirements always supplied.

No one can deny that house-rent is largely connected with social considerations, so much so, indeed, that this point is only one more factor in favour of the foreign flat system. Here at home those obliged to consider their house-rent,—and who is not in that position, for in England nearly everybody is over-rented?—are yearly finding the difficulty growing of accommodating themselves in quarters which, while answering all social requirements, equally answer all the necessary pecuniary considerations. Now this is a position which, with us, weighs on a very much larger section of the community than will be found to be the case abroad. There, though it is true that in a walled city like Paris the dependent classes, with their very small incomes, are yearly finding the cheap accommodation of the past more difficult to obtain, those above them in position and means are yearly finding their demands more and more amply supplied. Now with us, we submit, this is not the case. The possessors of limited incomes,—who in our country form so large and respectable a section of our society,—are, it will be freely admitted, great sufferers by the enormous rise of rents in the present day, and the inadequate supply of homes suitable to the limited purses of a large number of cultivated people, who are consequently driven especially to the Continent, or to the provinces, where the sad struggle of making both ends meet can be more easily waged. This, we again repeat, will not be found to be the case abroad, because the "flat" system enables the rich and the moderately well-to-do to occupy in common, and pay each in their just proportion, one and the same house; a system, in fact, of co-operation, is the secret of the whole matter, to the profit alike of the tenant and the landlord, whose house is always filled, and whose return on his outlay is invariably ample to satisfy all legitimate demands. When it is added that, by the erection of the block which his architect has skilfully and economically built for him, on the small tract of land he may have bought, the said landlord has beautified his city with an imposing architectural feature, can it be said that there exists any objection to such a system of what is, after all, we repeat, only the effect of intelligent co-operation?

Objectors there are, we know, to the so-called "French flat" system, but here again a small degree of ingenuity will overcome many of the difficulties attendant on the alleged housing of six or eight or more families in one block. Our American cousins have some years since considered, and to a great extent solved, this problem of adapting to Anglo-Saxon tastes (perhaps rather we should say prejudices) the question of what may be termed co-operative existence, by a very ingenious plan,—one we would sincerely wish to see attempted in our country,—of accommodating in a block of houses, each four stories high, four families in each house; a family, that is, on each floor, and a separate entrance to each house, this plan differing materially, it will be seen, from the foreign system, which has for the whole block only one entrance, invariably a stately *porte-cochère*, a great architectural want in our cities. This American system, delightful in its way, and admirably suited for small purses, certainly does away with the very satisfactory palatial element of the foreign flat, but it seems to answer our singular English ideas of privacy; each house in a block, such as we speak of, being supplied with an ingenious arrangement of *cordon*, bells, and speaking-tube, by which the occupant of each floor can from his own room communicate with the visitor at the front door, and by the *cordon* open the door without the necessity of leaving his own room. This, of course, is a thoroughly American plan of grappling with that most difficult of all questions in "the States,"—domestic service,—and might or might not be adopted in England. When we add that each floor in such a block is provided with an admirable bath-room, supplied with an ingenious boiler, as also a lift, in addition to the necessities of a kitchen, fitted up with range and shelves, washing-tubs, &c., dining, drawing, and sleeping rooms, some idea can be gathered of the manner in which our cousins have grappled with the question, yet we speak from the personal experience of some years back, and of late the flat system has made in New York immense strides, as our columns bear from time to time ample evidence.

In spite, however, of all these ingenious experiments, we cannot but feel that the system in vogue on the Continent is the best suited for all wants; a system which, as we have more than once described in these pages, enables the possessors of limited incomes to share in the upper stories in proper proportion with the wealthy tenant on the first floor the expenses of what exteriorly is nothing less than a palace. All over the Continent, in Paris, in Brussels, in Berlin, in Rome, in Vienna, these palaces are being erected, their apartments rapidly filled up from ground-floor to fifth floor, and the very large rent which in England falls so heavily on *paterfamilias* for a house,—a great part of which is probably unoccupied,—being shared on co-operative principles by a dozen or more tenants.

When we hear, as we have lately done, of the charitable efforts of would-be benefactors to our civil servants, suggesting such really impracticable ideas as the sale to our dapper young Government *employés* of the second-hand clothing of their more fortunate friends, we are strongly inclined to ask how it is that no one should have come forward with the suggestion that our civil servants should be housed on the co-operative principles they have worked so well in connexion with their other every-day wants. Why should the civil servants of one and the same office be scattered over all points of the compass, some at Brixton, some at St. John's Wood or Clapham, some, more fortunate, in aristocratic South Kensington, and where not? And once the system had proved successful, why should not a similar system be extended to that enormous army of *employés* who pour into the City from the suburbs every morning by every possible means of communication, crowding trams, omnibuses, and trains, hurrying up from long distances, and after hurried meals, to their offices in town, once again at the close of the day to hasten back to the same distant points from which they are destined day after day to repeat the same monotonous and expensive journey? We are at a loss to understand how a co-operative system of paying house-rent has not followed the success of the Civil Service co-operative system of supplying general stores.

As our flat system at present exists in London, our complaint against it, comparing it from personal experience with the foreign system, is, in the first place, that it has by no means solved the question of moderate rents, for the sum charged for any desirable flat is practically beyond any but very adequate means; in the second place, what flats do exist within the reach of moderate incomes cannot be said to possess any of that style or distinction which for half the same sum can be obtained on the other side of the Channel, where that first consideration of a bright entrance, or daily swept and waxed spic-and-span staircase, is a duty which, in the humblest *maison de rapport*, is enforced from that stern representative of the landlord the *concierge*, who occupies the *loge* on the ground-floor.

In the interests of the beautiful environs which surround London, daily damaged by the greedy advance of the speculative builder and his commonplace two-story residences,—not too often sufficiently healthy,—so pompously advertised as possessing all the advantages of "gas, bells, and venetian blinds; within two minutes of rail, 'bus, and tram, &c.,"—we urge the experiment being more freely tried, and nearer the centre of London, of the erection of a number of large houses on the foreign system of the French *maison de rapport*, which may be taken as the type most in vogue on the Continent, and only, after all, the

modern adaptation of the stately Italian *palazzo*, where from time immemorial it has been customary for the princely owner to occupy the *piano nobile*, the rent being defrayed by the occupants of the upper stories, who are thus able to enjoy at an economical rate all the advantages of living in a palace. This is the system which, with slight modifications, exists all over the Continent, and to any one who from experience is able to compare the appearance of the great foreign capitals with ours, we consider the question ought to be easy to decide which is the more desirable, that of building-up a palatial capital to last practically for eternity, and thus, as Willis, the American writer, once wittily remarked, making the sky pay ground-rent, or our own system of spreading out our petty residences over miles and miles of country, thus creating distances which only modern means of communication can overcome.

It is not, we think, a question which is wholly involved in the marked differences existing between our imperfect lease laws and the freer and more generous laws on this question prevailing on the Continent. It is largely involved in mere national prejudices and routine, and must sooner or later come under the consideration of the governing authorities, who, to quote the words of Mr. Francis Peek, the writer of a recently-published and admirable work, entitled "Social Wreckage," seem only disposed to defend the laws which jealously prefer "the supposed rights of property to the health, morality, and welfare of the people."

THE BURLINGTON FINE ARTS CLUB.

Having already bestowed considerable space in commenting upon Rossetti's work as exhibited at the Burlington House Loan Exhibition, we think it unnecessary to do more than mention the fact that the members of the Burlington Fine Arts Club have also got together a collection of oil paintings, crayon studies, water-colours, and small sketches by the late artist. Admirers of Rossetti who found the visitors to the Academy rooms were not so much impressed as they ought to have been, said, "Oh, you should wait till the collection at the Burlington Club is accessible: that will show better what Rossetti was." As we anticipated, there is nothing at the Club to lead to any modification of the views we have already expressed in regard to the value of the artist's work. A large number of the exhibits are replicas of, or studies for, works at Burlington House. Mr. Graham has lent a rather smaller edition of the Liverpool Corporation's picture, "Dante's Dream," which is entirely finished, whereas the Liverpool picture, we are told, was not. The smaller edition has the same characteristics, however, and remains, as in the larger one, a fine and pathetic idea marred by disagreeable colour and weak drawing. Some of the small studies in black and white media at the club show that Rossetti was often more powerful, and showed as a more true artist, in his first ideas than in his subsequent elaboration of them into paintings, in which form they were too often spoiled by the want of that technical power which the artist never seems to have laboured or cared to acquire.

THE MEMORIAL CHURCH AT CONSTANTINOPLE.

We regret to hear from an English resident at Constantinople that the church erected there as a memorial of those who fell in the Crimean war is in danger of falling into decay from want of any provision for keeping it in repair. It is now, our informant says, considerably in need of structural repairs, and the principal cross on the exterior has for some time been broken, and its remains stand upon the gable with a very forlorn appearance. It seems that the Society for the Propagation of the Gospel, which was entrusted with the funds raised by general subscription for the work, rather unwisely (though, no doubt, with the best intentions) expended the whole sum on the church, leaving no reserve fund for repairs, trusting, perhaps, to its future congregation to keep the church in proper condition. We are assured, however, that the congregation of the Memorial Church is quite the reverse of a wealthy one, the church being out of the way of the "fashionable quarter," and the wealthy English residents attend mostly another church at some distance from the memorial building. It is apparently no one's duty to keep the latter building in repair, unless it be the duty of the congregation, who have no funds for the purpose.

If this is correct (and we have it on the authority of a witness who ought to know), surely something should be done by the English public or the English Government to keep the building in a creditable state. It is a church designed by an eminent English architect (and a very good specimen of his ability), by national subscription, as a memorial to English soldiers; and it is certainly unseemly and discreditable to us that it should be allowed to fall into decay. We may have doubts, or more than doubts, at the present moment, about the wisdom of the Crimean war; but there are certainly no doubts as to the heroism displayed by our army that was engaged in it, and we should at least endeavour "to keep their memory green" as far as keeping up their monument will avail to do so; besides which, the spectacle of an English-built church in a foreign country, decaying for want of looking after, is not a sight to give us credit in the eyes of the natives.

HULL AND BARNSLEY RAILWAY AND DOCK.

The 23rd of January was a red-letter day at Hull. For the long account of the works now in progress to connect the Humber with the heart of the Yorkshire coal district and for the more adequate protection and convenience of the shipping that seeks the Port of Hull, we refer our readers to a detailed account in the *Times* of the 24th ultimo. We wish ourselves to call attention to one or two of the most important features of this great series of public works. The total length of railway to be constructed is sixty-one miles; the amount of excavation necessary is 5,000,000 cubic yards, or about 82,000 cubic yards per mile, which is 12,000 cubic yards per mile above the average given by Mr. Robert Stephenson in 1856. There will be four tunnels, of the aggregate length of 4,263 yards, in this distance; about half of which length is contained in the Drewton tunnel, which is 2,112 yards long, and 200 ft. below the surface. Near South Kirby is another tunnel, 1,224 yards long. But the features of the work which merit most attention (especially when we bear in mind the great project of the Manchester Ship Canal) are the swing-bridges over which the railway runs. The Hull river is crossed by a swing-bridge of 75 ft. span. The bridge over the Ouse is 135 yards long, the navigation being provided for by a central swing, having two openings of 100 ft. each, flanked by two side spans of 85 ft. each, the swing portion of the bridge being moved by hydraulic power.

The new Alexandra Dock at Hull will have an area of 46½ acres, which will raise the dock accommodation at Hull to about 134 acres. Between 1870 and 1880 the tonnage of shipping upon which dock dues were paid in Hull rose from 1,487,884 to 2,414,600 tons, or by 62 per cent. In the value of its imports and exports (although not either in its total tonnage or in the number of its vessels) Hull is already the third port in the United Kingdom, the value in 1880 having reached 38,735,272*l*. By a comparison of returns, however, it would seem that of the 9,455 vessels, of an average tonnage of 389 tons each, credited to Hull in 1880, only 65 per cent. can have paid dock dues, as the total tonnage set down in the official returns is 3,877,872 for 1880. To accommodate a trade of that magnitude it would require (according to the rough rule that we gave in our number for July 8th, 1882) upwards of 200 acres of docks. The dock accommodation of Liverpool, as we have shown, is 525 acres, for under 8,000,000 tons of shipping. In the twenty years from 1861 to 1881 the shipping of Liverpool has increased by 59 per cent., that of the Tyne ports has increased by 85 per cent., and that of the Clyde by 103 per cent. These enormous rates of increase, however (if the authority of the correspondent of the *Times* be reliable), are altogether distanced by the growth of Hull, which shows an increase of 62 per cent. in shipping, and of 58 per cent. in the rateable value of the Parliamentary borough, in the ten years from 1870 to 1880. The effect of putting a port evincing such signs of vigorous life into better communication with the entire system of West Yorkshire collieries must be considerable. It is only to be wished, on the part of those interested in Hull, that the service may be at least partly effected by the cheapest known method, that is to say, by inland water-carriage. The expenditure of two or three millions of money on a colliery railway is, just at present, a somewhat questionable proof of wisdom.

TALL CHIMNEY CONSTRUCTION.

Tall chimneys are to be found over the manufacturing areas of Great Britain, and, looking to the frequent failures of such structures, it is time some special attention should be paid to their construction, use and maintenance. At present the construction of tall chimneys is not under any form of official regulation and inspection, such as is given to ordinary buildings. By-laws regulate the thickness and construction of factory, warehouse, and other walls in proportion to height and purpose; but a tall chimney may be erected outside any such stipulations or restrictions. Again, when in use there is no limit as to the extent of work a tall chimney may be made to do, as, when designed for one set of furnaces, others may be added without stint; or, so long as the flue will receive and pass up its shaft the gases and intense heat of combustion. That tall chimney-shafts should have the inner lining burned out, clinkered, and swollen, and the main shaft bulged and cracked from bottom to top, is no wonder; but that they should be allowed to stand in this condition is a wonder. There are scores of tall chimneys now in work more or less bulged and cracked by the intense heat from the connected furnaces. Attempts to hoop and mend are made when the dangerous structures ought to be taken down. Again, many tall chimneys are made top-heavy by massive caps or cornices, supposed to be ornamental, but which really serve no other purpose than to endanger the stability of the chimney; and some such absurdly loaded chimneys have had their tops broken off in a gale of wind. Other tall chimneys have weak foundations, and if they do not fall when new, become leaning towers. Others, again, are caught by a storm when new, and are bent, or they bend from innate weakness, and then a celebrated Steeple Jack is set to work to wedge, saw, and cut the chimney-shaft to bring it back to the perpendicular. Now, if tall chimneys were placed under proper regulations and inspection, Steeple Jacks would have to find some better employment. It is absolutely intolerable that men should be allowed to tamper in such a way with structures which ought to be unmistakably safe. A tall chimney mended is self-condemned, and ought to be officially condemned to be taken down and rebuilt. Half measures should not be tolerated. There should be no mistake in foundation, in design, or in the construction of a tall chimney-shaft, placed in a town, and rising from 100 ft. to 300 ft. or even 400 ft. from the surface. For such structures the best talent should be employed to design, the best materials should be used in construction, and the best workmanship should put them together. The flue should be of ample capacity, and should be independent of the main structure, — having air-chambers betwixt the flue and the outer substance to prevent the transmission of heat from the flue, and also to enable the flue-lining, when burned out, to be safely renewed. The entire structure, from bottom to top, should also be homogeneous, and not a hybrid of wall-stone, rubble, bad mortar, and bad brickwork.

Civil Engineer.

Joys Green Schools, Lydbrook, Gloucestershire. — These buildings were formally opened for scholastic purposes on the 15th ult. They have been erected by the Forest of Dean U.D. School Board, from the designs of Mr. A. Smith, architect, Mitcheldean, and provide accommodation for 270 children. The walls are constructed with grey Forest of Dean rubble stone, with rock-faced dressings, and the roof covered with blue slates. The buildings, which comprise schools, with teacher's house detached, present a most picturesque appearance, being Gothic in style, and situated upon a hill overlooking the river Wye, with its attractive scenery in the valley beneath. They have been built by Mr. Thomas Foster, of Abergavenny, at a cost of 2,960*l*., Mr. Leary, of Bristol, carrying out the heating arrangements.

REPORT ON ARTS IN ROME.

AN official report on this subject has just been published, and contains some information worthy of reproduction. It is noted that the most ancient art institution in Italy is probably the Roman Academy of St. Luke. From time immemorial, and long before the League of Florence, there existed in the Eternal City a Society of Painters, which afterwards took the name of the "University of Arts," and had its seat in a small church dedicated to St. Luke, on the Esquiline, conceded to it by Pope Gregory XI., reigning at Avignon, in 1371. Sixtus IV. extended the statute of the college in 1478 by a code which still exists in the archives of the Academy. By Sixtus V. the institution was removed to the Forum, where it now is. The Academy is an independent corporation. It admits as fellows artists of all nations, creeds, and political persuasions; organises prize competitions, gives pensions to art-students, and attends to the care and progress of national art, and the preservation of ancient monuments. Napoleon I., with the assistance of Canova, formed its present statutes, with important privileges and functions. By them the number of resident fellows is fixed at twelve for each department, viz.:—Painting, Sculpture, and Architecture, and twenty non-residents of each class. The number of honorary associates is not limited. The art-gallery is the private property of the Academy; it contains the collections of pictures left to it by Fabio Rosa, Carlo Maratti, D. Pellegrini, Gregory XVI., Wicar, and others. Zuccari, Poussin, Pietro da Cortona, Maratti, and T. Nimardi have successively re-arranged the works of art, the catalogue of which is too well known to demand repetition here. There are over 200 pictures in the gallery, and a rich collection of medals given by Gustavus III. of Sweden, including also Pistrucci's Waterloo medal; those in gold, collected by Professor A. Juvarra; one presented by King Charles Albert, and many others.

The library given to the Municipality of Rome, by Antonio Sarti, perpetual honorary president of the Academy, and a distinguished architect, is enriched with from 10,000 to 15,000 historical archæological and art volumes. The donor bequeathed an annual sum of 40*l.* together this collection, one of the finest ever made by a private individual. During the winter season (November to June) the library is used by about 1,000 students.

The sculpture-rooms contain works by Thorwaldsen, Canova, Gibson, and other masters. In the archives are many fine sketches and drawings, engravings, and rare editions, as well as a certain number of interesting documents and manuscripts. There are 256 portraits of former members of the Academy in the gallery.

The famous French Academy, founded by Napoleon the Great on the basis of a very ancient previously-existing institution, well maintains its well-deserved renown. The last yearly exhibition showed some good work in every department, and more particularly in that of architectural design, as usual. The director of the Academy is selected from three candidates, by the President of the Republic, for a term of six years. Those students who have gained the "grands prix de Rome" in painting, sculpture, architecture, music, and engraving *en taille-douce*, are pensioned by the State for four years; medal and stone engravers for three years. They must remain unmarried. An annual sum of 3,510 francs is given to each, in addition to 600 francs for journey expenses from Paris to Rome, on their arrival and final departure, and a yearly sum to pay the expenses of their work. Student architects proceeding to Greece, where there is a sister institution, receive 800 francs; when travelling for the sake of instruction, the students receive 267½ francs per month. There is a library and museum of casts attached to the Academy; the members having also free admission to all the museums, galleries, and monuments in Rome, and the use of a living model sitting for two hours daily at the Academy. Each student of painting must, during his first year, execute a figure-subject from nature, a two-figure drawing after some great master, and a drawing of some noted statue or bas-relief; in his second year, a picture of at least two nude or semi-nude figures, life-size; and in his third year, a copy of some old master or noted fresco, full-size, to become Government property, and a sketch of his own composition; in the fourth and last year, he must send to Paris a painting with figures of his own composition. A similar course of work is expected from all the other students, each in his own department.

At the beginning of 1881, the Spanish Government opened a handsome art academy in Rome, on similar lines to the French Academy. An exhibition of work by the students was held at the time of the public inauguration of the building, and showed some good painting. No subsequent exhibition has taken place, and no report has yet been sent home from this institution.

The present Minister of Public Instruction, Dr. Bacelli, is very zealous in furthering excavations and restorations of ancient monuments. Under his auspices the Pantheon has been isolated, and the Forum is being restored to its original ground-plan. Most of the monuments in the kingdom are now in the hands of Government officials, by whom they are well looked after and preserved.

A large and handsome building is in course of completion in the Via Nazionale, destined to be opened shortly as a permanent National Fine Arts Exhibition.

TRADE CONFLICTS AND CERAMIC SCHOOLS AT LIMOGES.

THE ceramic works for which Limoges is renowned throughout France and among all connoisseurs have been seriously disturbed by a general strike of the workpeople. This is, perhaps, the more unfortunate, as, according to the declarations which have been made in public by M. Jules Ferry and other prominent French statesmen, Limoges, by its native industry, is likely to assist French merchants to compete against foreign fabrics. In art industries the French have been sorely pressed of late, and, instead of quarrelling among themselves, workman, artist, and capitalist should seek to work in harmony if they wish to hold their own on foreign markets. The present dispute began, it appears, last May, when an employer reduced a workman's wages to the extent of about 20 per cent., because his health had become enfeebled through phthisis. This reduction, however, was soon extended to other workmen, and a partial strike of 150 hands ensued. A committee was then appointed, and negotiations were opened to fix a general scale of wages, and this compromise had already been accepted by eighteen out of thirty-five firms, when suddenly the agreement was torn up, the signatures were repudiated, and a general reduction of wages insisted upon throughout the trade. A general strike and lock-out has been the consequence, and there are now about 5,000 workpeople without employment. The work, it should be stated, is done by the piece, and the workpeople maintain that on an average they do not earn more than 2s. a day. In consequence of this strike, M. Roussier, a porcelain worker, and M. Joffrin, the working-man member of the Paris Municipal Council, have been over to London as delegates from Limoges, and have obtained some assistance from the London Trades Council for the French artisans on strike. The poverty and want at Limoges are very great, and, in spite of English assistance, it is doubtful if the strike can continue for long.

In the face of this important struggle, which is likely to attract some attention, a general description of the ceramic industries of Limoges will not be out of place. For a long time it has been felt that the tendency which particularly characterises this epoch, namely the disposition to sacrifice art to cheapness, and to trade in shoddy, was damaging the high reputation of French exports. Other nations could produce shoddy articles with as great or greater facility than the French, and, if their country is to maintain the reputation acquired in time gone by, it must fall back again upon art, pure art, and leave to other less gifted workers the care of making cheap imitations. This is the spirit, at least, which has clearly manifested itself at Limoges of late years. The mere mechanical work, which was formerly held in considerable honour, has now been replaced by more intelligent individualism. The teachers seek to appeal to the thought, the mind, of the pupil. They invoke his powers of comparison; and, when some particular form or design is selected, urge him to see and convince himself that it is the proper, the most suitable form, instead of merely executing it in blind obedience to the spirit of routine. The teaching is based on the maxim that "what is thoroughly understood, what is well known and well seen, is easily drawn."

Formerly, especially among the younger pupils, no care was taken to instil useful knowledge. They were taught how to hold and cut their pencil rather than how to draw, and the models given to copy were of the crudest and least inspiring description. Now, on the contrary, if there is any difference, greater pains are taken with the beginners than with the older students. These classes have been placed under the guidance of M. Haridas, and he makes his pupils execute *bas-relief* models representing combinations of geometrical lines, that become more and more complicated as the pupils advance. These models, placed in different positions, teach the pupils the laws of perspective, which are learned practically before they are taught theoretically. Thus the child's intelligence is not worried in its first lessons by dry and more or less unintelligible laws and rules. It is allowed from the very first to indulge in the more amusing effort to draw or model something; and by copying real objects, from the beginning, there is none of that timidity which so often impedes artists when, after studying only drawings, they are called upon to reproduce forms from life.

One of the most interesting features of this school of art industry is not only the presence of a large number of young ladies, but the very great success they have acquired. M. Meyssat, whose exhibits at the Palais de l'Industrie in the Champs Élysées have made him well known in French art circles, is the director of the higher school of Limoges, and it is under his tuition that Mdlle. Eva Alexandre has produced objects, notably a water-jug and a saucer, which have won universal praise. Mdlle. Bouteilloux, another pupil, obtained the first prize for drawings from the antique, and Mdlles. Garceau, Gautron, and Faure won prizes at a local exhibition for their drawings and paintings of flowers. M. Grenaud is the teacher in this latter department, and he is also professor of composition and ornament; while it is to M. Louvier de Lajolais that is due the initiative of a concourse recently held between the ceramic art schools of Paris and Limoges. As each school has its special qualities and its special defects, it is natural to anticipate mutual improvement from such competitions. Thus we find that the first prize, a drinking-cup, was won by a Parisian, but the second best design was executed by Mdlle. Brunet, of Limoges. Mdlle. Marie David, of Limoges, for ardent colours, for amber tints, and yellow enamel, has greatly distinguished herself both in local exhibitions and at the Paris *Salon*. Many male students have also won laurels, notably MM. Honorat, Lajouanie, Burg, and Fournier; and so complete is the system of teaching that, under the personal direction of Doctor Chénieux, the pupils have also to follow an elaborate course of anatomy. M. Pradeau and Mdlle. Marie David are the laureats of the school of anatomical drawing.

At the distribution of prizes, M. Louis de Ronchaud, director of the National Museums, made a few felicitous remarks concerning the work done at Limoges. The union of two schools, so different and yet so brilliant in their works, would bring about many fortunate and unforeseen benefits. "By passing, in their manufacture, through the sculpture and ceramic painting workshops of Limoges, your compositions, inspired by the brilliant genius and imagination of Parisian artists, have acquired, under the supple fingers of young girls, your distant co-workers, new qualities, new delicacy of finish, and experience, from which works of art have resulted that are more pleasing, more attractive, and in every sense a notable improvement."

In all this work, and the progress that has been accomplished, the French Government deserves much praise. Throughout France, the need of improvement with respect to technical education has been keenly felt; and in all directions efforts have been made to introduce a more intelligent method of teaching. Routine, it is now at last admitted, is the worst of all schoolmasters. The individual intelligence of the pupil is the real foundation of genius; and it is themission of the teacher to develop and not to check, by old-fashioned disciplinarian rules, the personal idiosyncrasy of each student. At Algiers, at Nice, and especially at Limoges, these new doctrines have been welcomed; and

now St. Pierre les Calais has petitioned Government to found in that great industrial centre a school of arts applied to industry. The Budget does not, however, admit of very extensive expenditure, and some check has to be placed on these generous aspirations. In the meanwhile, if tranquillity is to be maintained, it is important that the interests of the workmen, as well as of the artists, should be taken into consideration. The workmen are electors, and will not support so willingly a Government that allows them to starve, though, doubtless, the dispute has nothing to do with the administration. Without taking into consideration the exaggerated claims of semi-political working men agitators, it must be acknowledged that 2s. a day, now that the price of provisions has so much increased, is not enough to procure the necessities of life, even in a French provincial town. It would be in keeping with the true interests of the employers themselves that their workpeople should be fairly contented. They would then not merely work better, but would not be so easily carried away by the extreme revolutionary propaganda and the anarchical movements that so embarrass the Government.

On its side the Government, freed from this source of anxiety, might more readily find the time and the funds to further strengthen the schools where art and technical education help so efficiently to create workers of the highest order. French manufactured articles would then, of course, find a more ready sale both on home and foreign markets; and thus, from the general contentment, national prosperity would surely ensue, and all parties equally benefit.

POZZOLANA DEPOSITS IN ITALY.

Pozzolana earth is won in large quantities near Naples, the mines of Bacoli near Pozzuoli especially yielding it in excellent quality. A very good material is also produced at Bassano, near Torre del Greco, and at Montenuovo, which is used very much for submarine works. In Naples, the better kinds are called "*pozzolane di fuoco*," to distinguish them from "*pozzolane dolci*," which contain many foreign earthy substances, and, being dug at a slight depth below the surface, even in the city itself, are much used for ordinary building purposes. The better descriptions are dark brown in colour; medium kinds are yellow, and inferior sorts yellowish white. A dark brown volcanic earth, called "*ferrugine*," is much used for lining cisterns. Near Naples, "*lapilli*," also of volcanic origin, are employed for mortar. This material consists of fragments of pumicestone and dense volcanic slag, and, mixed with lime, gives a very durable mortar, serving for paving and covering the roofs of houses. The pozzolana deposits of Bacoli, Montenuovo, and of Vesuvius are the most important, both on account of their favourable position with regard to being sent away by rail or shipped, and the excellent quality of the material and the quantity produced. All three are open workings. Although the mines of Bacoli alone supply annually 50,000 tons of pozzolana, hardly more than 10,000 tons are produced, which are delivered free on board at the price of 10d. per ton, and are partly taken as ballast. Montenuovo, near Bajae, produced in 1880 about 3,600 tons, of which two-thirds was taken away in a sifted, one-third in a crude state, the sifted material at 1s., the coarse at 10d. per ton. The mines of Bassano, near Torre del Greco, supply principally the Southern railways. The material is passed through screens with meshes 3-16ths of an inch wide at once into trucks standing in sidings, and sold at 1s. 10d. per ton.

Much pozzolana earth is mined in the volcanic zone of the province of Rome, especially near the capital itself, in the Albanese and Viterbo mountains. There it is found mostly of a reddish violet, very seldom of a black or grey, colour. This kind of pozzolana is used instead of sand in the preparation of mortar not exposed to the action of water. As good sand cannot very easily be obtained near Rome, the use of the earth as a substitute for sand has become very general, and has imparted a certain importance to the mines. The earth occurs there along with tufa in alternate, regular layers of a thickness up to 40 ft. All the mines (from ten to twenty are being worked) are on the left bank of the Tiber. Nearly all are worked underground at a depth of from 30 ft. to 40 ft., and communicate with the surface by a sloping level. The system of mining pursued is that of board and pillar work; the chambers are from 7 ft. to 12 ft. wide, and from 9 ft. to 25 ft. high, whilst the pillars occupy a space of from 18 to 60 square feet. As a rule, only one level is being worked, no timbering or pumping and no ventilation being necessary. The two mines of Portonaccio, on the Via Tiburtina, and two others at San Paolo, on the road to Ostia, are also able, on account of their position on the Tiber and near the railway, to send their pozzolana to Rome. These pits have surface and underground tramways, and shoots at the river-side. In the other mines and open workings, the earth is loaded at the working places in trucks holding about half a cubic yard. The pozzolana earth of San Paolo has the following composition:—

Silicic acid	47·66
Alumina	14·33
Magnesia	3·86
Peroxide of iron	10·33
Lime	7·66
Water	7·03
Alkalis and volatile substances.	4·13
Sand	5
	100

For producing mortar, &c., pozzolana is mixed in Rome with fat lime, as it is obtained from the Cornicolani mountains. The proportions of mixing vary with the application; good hydraulic cement ought to contain 18 per cent. by weight of fat lime. In Rome the mixing is done in the following proportions, by volume:—

	Lime.	Pozzolana.
For coarse work (tufa)	15	85
For coarse work (bricks)	30	70
Facing with bricks	45	55
Paving of tiles	36	64
Paving of gravel	27	78
Plastering and stucco work.	40	60

In executing brick work, bricks and mortar are used in the proportion by volume of 3 to 2. The specific gravity of the pozzolana earth of Rome is, according to Cavalieri, 1·232; that of mortar, 1·324. The resistance to pressure of this mortar was ascertained by Rondelet to be 488·3lb. per square inch, while that of mortar, well rammed in, was 637·13lb., and that of mortar sixteen years old was 726·53lb. This mortar, which was tested at Paris, consisted of three parts of Roman pozzolana earth and two parts of slaked lime of Marly. The production of pozzolana earth near Rome varied during the last ten years between 150,000 and 200,000 cubic yards. The export of screened material was from 10,000 to 20,000 yards annually.

THE IMPERIAL PALACE AT STRASBURG.

The German Imperial budget for 1883-84 contains an item of 553,200 marks (27,610*l.*), being a second instalment for the erection of a palace for the German Emperor in the city of Strasburg, in Alsace. The Money Bill is accompanied by a design of the building, with some explanatory details and estimates of the cost. The palace is to be erected in a new part of the city, at a spot which is to be called the Kaiserplatz, or Emperor's-square, and opposite the present theatre and palace of the governor of the province. It is intended only for the occasional or periodical residence of the German Emperor and Empress, with their court retinue, or for their accommodation upon official visits to the "Reichsland" of Alsace-Lorraine. It will be quite a monumental building in style and proportions, and will be built as far as possible fireproof. The exterior will be in the grey sandstone of the Vosges. The chief front will present a series of Ionic columns, above which will rise a frieze, adorned with groups of heroic figures, and crowned with a cupola. The total cost will be 2,660,000 marks (133,000*l.*), of which 2,540,000 marks (127,000*l.*) will be for the building alone, the rest being for the gardens and other appurtenances.

Lerwick Town-hall.—The first of the gifts presented in aid of the decoration of the Lerwick Town-hall and Municipal Buildings, being the painted-glass medallion presented by the burgomaster and magistrates of the city of Amsterdam, has arrived at Lerwick. The design of the window, which is artistically executed, is intended to represent the nature of the intercourse which has existed for centuries between Holland and the Shetland Islands.

IN AND AROUND THE ROYAL COURTS OF JUSTICE.

Sir,—You have already discussed from time to time the general architectural character of the Royal Courts of Justice, a building which is undoubtedly the most important which has ever been erected in this country, the Houses of Parliament only excepted. It is not too soon, however, to offer some observations upon it, as the New Law Courts of the metropolis, from the experience which has been gained by its partial use since the beginning of the present legal sittings. And if the remarks appear too critical it must be borne in mind that it would be impossible to touch on the many satisfactory portions of this huge pile, and that in criticising it one is not to be taken as overlooking its good qualities. The most noticeable and prominent mistake which every day's experience seems to show has been committed is in the waste of space in the central hall. The courts do not open directly into it, and they are reached from narrow and dark galleries, which are connected with the central hall by equally dark staircases and passages. Consequently the central hall, it is clear, is used almost entirely as a mere passage through which persons hurry, and wait if they desire to do so in the galleries adjoining the courts. But Westminster Hall served as an enormous ante-room and waiting-chamber to the courts. It served as a place where barristers and solicitors walked up and down, arranged terms, and discussed pending cases and the conduct of them. But Westminster Hall was originally used for the purposes of the courts, and this other use of it was secondary. But the architect of the New Law Courts has adopted the principle of a great central hall, which requires a large amount of precious space, without having duly considered the actual use which it would be. This appears to us, for I speak for more than myself, and we think further experience will prove it, to be the central fault of the design. It is especially noticeable, also, because the passages or galleries connected with the courts are both dark and narrow, and had some of the space devoted to the hall been given to them, it is clear that they would have been not only more useful, but more architecturally striking. Any one who will take careful note of the north corridor, which runs across the building near the Carey-street entrance, and which is bisected by the passage which leads to this entrance, will have little doubt that greater height and space should have been given to this part of the building. Again, this north corridor is the main junction of the courts on both sides of the hall, and is rapidly becoming the main thoroughfare and meeting-place of the building; it is, in fact, taking the place of Westminster Hall. But though there is a large opening directly from it into the great hall, it is an opening which terminates in a gallery or balcony, so to say, which simply overhangs the hall, and leads to no place. Consequently, instead of descending by a direct communication, persons have to go down by the various troublesome staircases. It seems still possible to remedy this defect. Had there originally been a broad flight of steps leading up the court corridors, something after the manner of Westminster Hall, it would have been of great practical use. As it is, this gallery and balustrade should be altered, and a flight of steps from each corner should be constructed so as to place the court corridors in direct and easy communication with the hall, and thus make the hall ease the corridor of the throngs which now fill it and will, when the courts are in full working order, inconveniently crowd it.

We have already mentioned the darkness of the passages and the troublesome character of the stairs; it is really sad to think of the difficulty which any aged or feeble member of the public will have who has to use the public galleries, for even the strongest complain of the fatiguing character of the flights of circular stairs up which it is necessary to struggle to reach these public seats. In some of the courts much inconvenience is caused by the absence of any communication at the back of the court with each side. Of course, persons having business in the courts, whether as litigants, counsel, solicitors, or witnesses, constantly want to go from one side of the court to the other. It is not very respectful to the judge nor conducive to the placid conduct of business for persons to rush like rabbits through the solicitors' well, disturbing its occupants and

distracting counsel and judge. It is equally inconvenient to have to go outside the court and enter by another door; for each time the door is opened a noise and disturbance are created, and the noise of the persons passing up and down the adjoining corridors becomes distinctly distracting. These drawbacks can therefore only be avoided by having a communication between each side at the back of the court, and it is surprising that this should not have occurred to those responsible for the internal plans of the courts. It appears pretty clear also that the court of the Lord Chief Justice is too large; an undue size is not conducive to business, and only causes a number of idlers to congregate in it. The main or desirable feature of a court is that it should be moderate in size, conveniently planned, with good acoustic properties, be well ventilated and kept at an even temperature, and that there should be plenty of space outside for persons to wait and discuss their business. A great chamber such as that called the Court of the Lord Chief Justice of England is too large for the convenient despatch of business. As regards minor inconveniences, such as banging doors and noisy seats, these may be remedied, but defects such as too-large courts, and a too-spacious central hall and too-small passages adjoining the courts, are so intrinsic a part of the plan that they can only be noticed and regretted as now inevitable. But in speaking of small details we may draw attention to the seats, which are ingeniously contrived with a space between each, so that when a person has to sit very close in a crowded court he does so under somewhat uncomfortable circumstances. The mere fact that the seats lift up does not prevent them from adjoining throughout, and in the same way to cut off the corners of the desks is the cause of holes, which are capital traps to cause papers to fall to the ground. Nor again does the fact that the front row of the junior bar possesses ink-pots seem to be any reason why the benches at the back should have neither inkpots nor places for them. These are fortunately details which can be easily improved.

But it is quite clear also that it is not the inside of the New Courts which alone invites criticism. There are several urgent improvements needed immediately around them. The time has now come for the instant demolition of the miserable block of buildings which lies between the Strand and Holywell-street. The Strand is here far too narrow both for vehicular and passenger traffic; it is in a constant state of congestion. By removing these buildings and widening the roadway to the northern side of the Church of St. Mary-le-Strand, an open *place* would extend from this church and Somerset House right up to the site of Temple Bar. By this the traffic, which must necessarily increase in that part with the use of the new Courts, would have more freedom, and one of the most important sites in London would be vastly improved. For there can be no doubt that in a very short time both sides of the Strand, from Wellington-street to Fleet-street, would be filled with handsome buildings fitted for a chief thoroughfare of the metropolis. But this improvement is not the only one which is needed. A broad and handsome street should lead directly from the Royal Courts to the Embankment. All traffic from the south-east must now come along Fleet-street, and Norfolk-street is the nearest westerly approach from the Embankment to the Strand. Yet there is Essex-street, which actually opens into the Strand almost opposite the western wing of the courts. But Essex-street is now a *cul-de-sac* except for foot-passengers, who have to descend a flight of steep and dirty steps. It is obvious, therefore, that Essex-street should be made into a broad thoroughfare which would connect the Courts of Justice with the Embankment, and would form the channel by which traffic to the Law Courts and its neighbourhood coming from the south-east and the south-west would approach the courts. Here, again, one speaks chiefly with a view to practical convenience, but it must be apparent to every one that a fine open thoroughfare, with good buildings on each side, and flanked on one side as it approached the Embankment by the Temple-gardens, would be an exceeding improvement to London. Lastly, it is a cause of regret that the space lately occupied by the buildings which have just been pulled down between Bell-yard and Chancery-lane, immediately abutting on Fleet-street, is to be built over. Chancery-lane is too narrow as it is, but just at this part there is need for as much width as possible, not only to accommodate the passing traffic and the traffic which stops at and for the Law Courts, but to give a general view of the south-east tower of the Courts along Fleet-street, and thus add yet again to the architectural effectiveness of this new building. New circumstances involve fresh and unforeseen changes, and it is obvious that, having built the Law Courts, the work is far from ended, for all around old blots appear more clearly, and every day will show more plainly the need for improvements in the thoroughfares which connect all parts of London with the central home of English justice.

A LAWYER.

A DOCTOR'S HOUSE, BEDFORD PARK, CHISWICK.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last a new house which has just been erected for Dr. Gordon Hogg in Priory-gardens, Bedford Park, was visited by some of the members of the Architectural Association. This was the first "Visit" of the session, but in consequence of the inclemency of the weather there was but a small attendance of members. Mr. E. J. May, the architect, conducted the visitors over the house, which has been designed upon the principles laid down by Drs. Drysdale and Hayward, at the special wish of Dr. Hogg, as a residence for himself. The house consists of basement, ground and first floors. In the basement are the fresh-air chamber, the chamber for the heating-stove, with coal and wine cellars. The ground-floor contains corridor, 35 ft. by 8 ft.; staircase, 12 ft. by 8 ft.; dining or living room, 28 ft. 6 in. by 20 ft.; drawing-room, 18 ft. by 16 ft.; consulting-room; kitchen, 18 ft. by 16 ft.; and butler's pantry, offices, &c. On the first floor are corridor, 25 ft. by 8 ft., and six bedrooms, including nurseries and bath-room, &c. The principal thing aimed at is to produce a constant flow of fresh air through every room and corridor in the house, and it is calculated that the air in each room will be changed once in every twenty minutes. The air is admitted into the house by an area into a large chamber in the basement, containing about 1,500 cubic feet. It then passes up through gratings in the floor of the corridor into the various rooms of the ground-floor (which, with the exception of the consulting-room and domestic offices, are without doors, but have wide arched openings from the hall and corridor, across which openings it is intended to hang curtains), and up the well-hole of the staircase, and through special openings into every room on the first floor. From each room one or more separate extracting-flues go into a foul-air chamber in the roof, from which the foul air is drawn by a powerful current through a main extracting or down-cast shaft, which passes down an outside wall, and up behind the kitchen range, and ascends round an iron smoke-flue from the kitchen fire. The heat of the fire, specially arranged to act upon this ascending column of air, is intended to provide the suction power for drawing the air through the whole house, by means of the extracting-flues, from each room. The warming of the air in the winter is done by one of Mr. R. Renton Gibbs's hot-water circulating stoves in the basement, which warms about 550 ft. of hot-water pipe in the fresh-air chamber, as well as about 100 ft. of pipe running round the two nurseries on the first-floor. As the air enters the fresh-air chamber it will pass through canvas, and perhaps some special water-cleanser, and if thought necessary it can, in very hot weather, be cooled by being made to pass over ice. The windows are made to open, but are at present hermetically closed, excepting those in the kitchen; and as the air is thoroughly warmed by the hot-water pipes, the fireplaces which have been provided, but which are all bricked up (except, of course, that in the kitchen), are not intended to be used at present, though Mr. May stated that the system of ventilation could be worked in conjunction with open windows and fireplaces. It was incidentally mentioned to some of the visitors on Saturday that one of the few houses which have been built on this principle was occupied for three winters without any necessity being felt for fireplaces. But the head of the family was compelled to return to open fires on social grounds. The house, arranged on the principle described, possessed an equable temperature in every room; the result was that the members of the family scattered themselves in various rooms, to the apparent neglect of guests and visitors. Hence the return to what proved to be literally "the social hearth." The internal finishings and decorations of the house are all designed in very good taste, and the work has been well carried out. Mr. R. Renton Gibbs, of Liverpool, supplied the heating apparatus, as above stated, and gave much valuable advice in the arrangement of it. Messrs. Adamson & Sons were the builders. The whole of the work has been carried out from the designs and under the superintendence of the architect, Mr. E. J. May, of Hart-street, Bloomsbury. The cost of the house has been about 1,800*l*.

Some of the visitors afterwards went on to see another house which is being erected from Mr. May's designs in the Orchard, Bedford Park, but which will not be warmed and ventilated on the same principles as the house just described. Others of the visitors inspected the new extensions to the Chiswick School of Art, Bedford Park, consisting, on the first floor, of a large, light, and lofty modelling-room, with a semicircular roof in one span, the principals being of rolled iron, and made in Belgium. Below this room, on the ground-floor, is a lofty and well-lighted room, adapted for lectures and for science teaching. These works, which are nearly completed, have been, we understand, carried out from the designs of Mr. Burchett, the head master of the school.

TRAVELLERS TO BRIGHTON.

THE fluctuations in the rate of travel are shown most remarkably by an official tabulation of figures issued by the London, Brighton, and South-Coast Railway Company, as carried in a series of years over their lines. It proves the popularity of the Brighton line, the large volume of traffic it carries, and in a remarkable degree the downward tendency of travel. Selecting a few years from the eleven given in the table, we may present them at a glance, as follows:—

Year.	First Class.	Second Class.	Third Class.
1872 ...	2,166,328 ...	3,047,999 ...	17,569,327
1875 ...	2,335,005 ...	2,801,903 ...	18,274,878
1878 ...	2,224,277 ...	3,612,733 ...	24,841,425
1881 ...	2,116,009 ...	3,895,511 ...	32,368,005
1882 ...	2,056,518 ...	3,893,232 ...	33,921,791

The first fact that strikes the reader of these great totals of travel is that the number of the passengers has enormously increased in the eleven years bridged by the comparison. It was 22,783,000 in 1872, and it rose to 39,871,800 for the past year, so that in the eleven years seventeen more millions have been added to the number of the yearly ordinary travellers on this popular line (season-ticket holders being additional in all the years). It is an addition that is not exceeded by many railways, and it is one that shows how great is the growth of the habit of travelling. And in the first of the years named there were 101,533 season tickets, whilst last year the number had risen to 167,167, so that it is apparent that the popularity continues of the line with these important travellers. But a still more important change is shown in the classes of the travellers. Eleven years ago the first-class passengers were nearly a tenth part of the total,—now they form only a nineteenth part. The decrease, moreover, is actual as well as relative, for although the line has been increased, the number of first-class passengers is 100,000 less yearly now than it was eleven years ago. In the second class there is a slight actual growth, but a decrease in the proportion to the total. In 1872 the second-class passengers were about a seventh part of the whole, but last year they were only a tenth; and it is notable that whilst they have grown in the actual numbers down to the year 1881, last year showed a declension in the number carried, though the actual fall was small,—some 2,100. It is clear then that the growth that has been so very great in the eleven years shown in detail in the table, has been almost exclusively in the popular third class, and the extracts we give above show that sixteen million more passengers were carried in that class last year than eleven years ago. It is apparent that the whole growth of the traffic is now in that class, and this despite the fact that on the line there has hitherto been speed reserved almost exclusively for the upper two classes. The policy in this respect is now changing, and it is

probable that there will be a still more rapid growth of the popular class than there has been. Railways, as a rule, are now beginning to learn that it is to that class that they have to look for the growth of their revenue; and when this is recognised there will be a continual increase of the accommodation that is provided for it, and a continual endeavour to attract fresh traffic. Eleven years ago the popular class yielded 407,000*l.*, but it now yields over 700,000*l.*, and a growth such as that is marked enough to make its cultivation needful.

MONUMENTAL.

Victor Emmanuel.—On the 9th of January an equestrian monument to Victor Emmanuel was inaugurated at Verona with much ceremony, and in the presence of upwards of 30,000 persons. The execution of the statue is spoken of as very excellent. The sculptor is Signor Borghi.

Berlioz. — A public subscription has been started in Paris for the purpose of securing a bust of the well-known composer, Berlioz, and has been sufficiently successful to justify the promoters in giving an order for the work. The Abbé Franz Liszt has contributed 500 francs, and Hans von Bülow 300 francs to the fund. The bust is to be placed on the tomb of the composer on the 8th of March, the anniversary of his death. Subscriptions are received by "La Renaissance Musicale" of Paris.

PISA.

THE late Charles Dickens, in his "Pictures from Italy," speaks thus of the impression made upon him by that wonderful group of buildings at Pisa, which forms the subject of our illustration:—"It was a surprise to me to find it in a grave retired place, apart from the general resort, and carpeted with smooth green turf. But the group of buildings clustered on and about this verdant carpet,—comprising the Tower, the Baptistery, the Cathedral, and the Church of the Campo Santo,—is perhaps the most remarkable and beautiful in the whole world; and from being clustered there together, away from the ordinary transactions and details of the town, they have a singularly venerable and impressive character. It is the architectural essence of a rich old city, with its common life and common habitation pressed out and filtered away."

At first it may seem somewhat remarkable that the group of Pisan buildings should have impressed an Englishman in this way, because one would have thought that the recollections of our old English cathedral closes would rather have prepared our great novelist for the situation of these edifices.

Salisbury, Wells, and Winchester Cathedrals, are nearly as much removed from the bustle and ordinary life of the cities to which they belong as are the buildings at Pisa. We suppose, however, that Dickens's Continental experience had for the time being led him to forget this peculiarity of so many of our English cathedrals. In early times there can be little doubt that nearly all cathedrals were placed in closes or enclosures, but as the inhabitants of the cities increased these open spaces became built upon. This was especially the case on the Continent, where it was often found difficult to enlarge the walls and fortifications of the towns, and thus the only way of providing for a growing population was to build over the spaces left within the city.

One very great peculiarity of the group of buildings at Pisa is their remarkable unity. Although they contain work of every date, from the tenth to the sixteenth century, yet their general effect is that of a series of buildings, all erected at the same time and in the same style. A little study of their details of course shows this not to be the case, but there is a harmony about all the latter alterations and additions, which to any one not acquainted with architectural detail would lead to the idea that the whole group of buildings had been erected at the same date, and had presented pretty much the same aspect which they now do for some 700 years. This probably arises from the fact that a kind of Classical feeling pervades Italian architecture of every date. This will be seen at once by looking at the upper portions of the Baptistery, which, although Gothic as to their detail and date, yet from the exclusive use of the round arch, and a certain horizontal treatment in the arrangement of the various stories, the building has at first sight quite a Romanesque character.

The Cathedral of Pisa was commenced in the year 1004, and was completed in 1118. The architect's name is said to have been Busketus or Buschetto. Some writers have supposed that he was a Greek,—and the name certainly has a Greek sound about it. If, however, he was a Greek, he evidently did not show his nationality in the design for this cathedral, as the long nave and arches, deep transepts, and small dome at the intersection, are far more Italian than Greek in character. The building, in fact, bears a strong likeness to the old basilica of St. Paul's-without-the-Walls of Rome, with the addition of a developed choir and cupola over the crossing, neither of which features has any Greek characters about it. The oval form of the dome is, as far as we know, peculiar to this church.

There is a far greater amount of regularity about the Cathedral of Pisa than is to be seen in any church of its date, and its proportions were evidently carefully studied. Though very imposing, it is not a very large church, its internal length being little more than 300 ft. The interior of the building is wonderfully striking, and remarkable for its simplicity and dignity.

Close to the south transept is the celebrated leaning tower, which a few years back gave rise to so much controversy as to whether it had been originally built out of the perpendicular. It is, however, now a pretty well ascertained fact that this peculiarity is the effect of accident, and not of design; in fact, the west front of the cathedral and several of the columns are also out of perpendicular, and the high altar, a late Renaissance structure, had settled down so much at one end that it was found necessary to take it down, and re-erect it in 1825.

Although the "leaning tower" was not originally built out of the perpendicular, yet it is evident that this defect took place long before it was completed, because the upper stories have their columns longer on one side than the other, and the top story of all is built upright. The upper stories also are set back more on the inner than the outer side, all which shows that the builders were desirous of remedying the defect. The tower was erected in 1174, and it is said that one of its architects was a German (William, of Innsbruck); this, however, seems very doubtful.

The Baptistery, it is said, was commenced in 1152, under an architect called Dotti Salvi; but this seems to be contradicted by the existing inscription upon it, which is as follows:—"A.D. 1278 ÆDIFICATA FUIT DE NOVO." Now to what does this "Ædificata fuit *de Novo*" refer? It is generally supposed to mean that the work was "*resumed*" in 1278; but surely the expression "*de Novo*" can scarcely mean this. Then, again, 1278 seems too early a date for the upper portion of the building, which looks quite a century (if not a century and a half) later.

Is it not possible that the same failure of foundations may have taken place with the Baptistery which occurred in the case of the leaning tower, but to such an extent as to render its rebuilding a matter of necessity, and that it may have been rebuilt, the old materials being re-used, in 1278? The Baptistery is about 100 ft. in diameter, and 180 ft. high. The magnificent pulpit of Nicolo Pisano is in this building.

The Campo Santo, which is really the cloisters of the cathedral, and not a separate church, as it has been described, is isolated to the north of the centre of the cathedral. This is a great peculiarity, but is not unique, for the cloisters of the cathedral are isolated from the church, and could never have been connected with it structurally.*

The Campo Santo, which is of vast size, being 415 ft. by 137 ft., was commenced in 1278. It is full of monuments and sculptures of every date and style, and is a combination of cemetery and museum of sacred art. Its walls are adorned with most interesting frescoes, some of which are by Giotto, Orcagna, and others. The windows which look into the cloister garth are adorned with singular geometric tracery,—probably inserted at a later date than that of the erection of the building itself; is peculiar, and shows that the Italians never quite mastered this feature of Gothic architecture. The ground of the garth is said to have been brought from Mount Calvary by Archbishop Ubaldo; the tradition seems, to say the least of it, to be improbable, nor is it necessary as an explanation of the name Campo Santo.

* Old St. Paul's Cathedral had an isolated cloister, similar to the Campo Santo. It was called "Pardon Church Haugh."

"EVERSHOLT," CRICKLEWOOD.

THE building, of which we give a view this week, is being erected on the estate of Mr. Henry Horace Powell Cotton, at "Shoot-up-Hill," Cricklewood, as the residence of Mr. Thomas Bate.

The external walls are of deep-red Suffolk bricks; the string-courses, quoins, window mullions, and other masonry of Box-ground stone. The tower, which will form a conspicuous feature of the design, rises to a height of 62 ft., finished with an embattled parapet, and by its naturally elevated position (180 ft. above Trinity datum) will enable some extensive and pleasant views towards Hampstead, Highgate, Harrow, and Citywards to be seen from the summit. There will likewise be a turret on the north side rising 65 ft. to the vane. The dining and drawing rooms are 15 ft. from floor to ceiling, the former to be framed and panelled throughout in pitch pine, enriched with an elaborately-carved over-mantel reaching to the ceiling. A sufficiency of bed-rooms, also a morning-room, servants' offices, and so forth, will be provided, and the culinary fittings will have the latest improvements.

The architect is Mr. Edward A. Heffer, of 6, Victoria-road, Kilburn.

OXFORD AND CAMBRIDGE MANSIONS.

THESE buildings, arranged as residential flats, have been erected, during the last three years, upon land which has stood vacant for many years past, facing the Marylebone-road and Lisson-street, upon the Bond-Cabbell Estate, St. Marylebone.

In the arrangements of plan carried out, it has been thought advisable to limit the number of suites to six in each block, using one common staircase. The site being rather confined and of a peculiar shape, some blocks are smaller than others; the smallest, however, contain six rooms, and the largest nine rooms in each suite. All the usual accessories have been provided in making the different suites compact and self-contained. The elevations are finished in red bricks, with red Mansfield dressings; the staircases, in concrete, were formed by the Eureka Concrete Company.

In the rear is an open space, laid out as a garden, and common to the whole of the tenants, who have access to it from their respective blocks. The total cost of the buildings was 62,000*l.*, working out at about 10d. per foot cube.

The whole of the works have been carried out by Messrs. Mack & Humphreys, builders, under the direction of Messrs. C. Eales & Son, architects, of Welbeck-street.

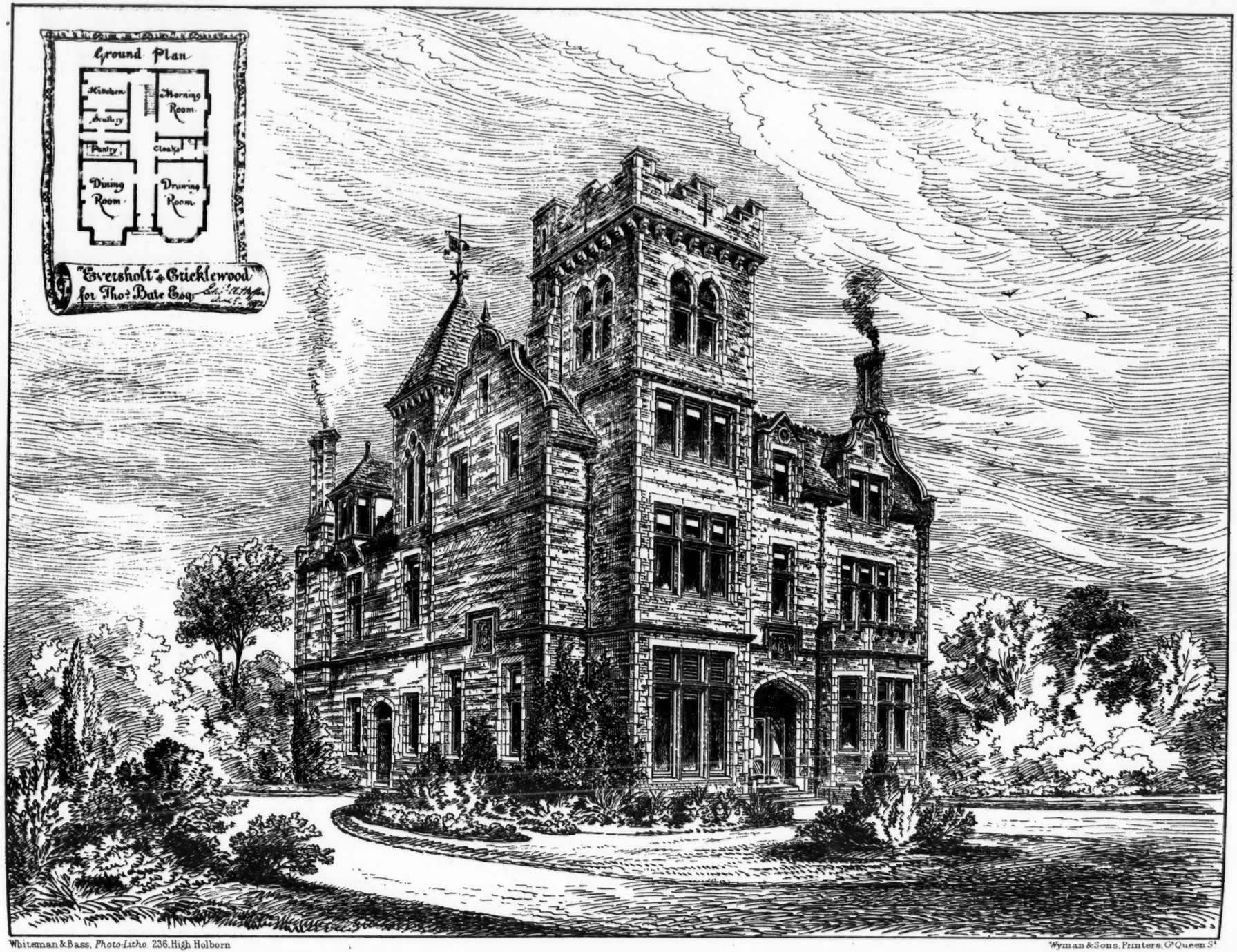
LONDON STREET ARCHITECTURE.

PREMISES IN OXFORD STREET.

THESE premises are erected on the estate of the Duke of Westminster, by Mr. William Adkins, whose increasing business rendered larger accommodation necessary. The block comprises two distinct houses and shops, the corner one being occupied by the proprietor. This has an entrance also in George-street. Very complete arrangements were made to meet the necessary requirements, and some rather elaborate planning was involved. In the prosecution of the works many difficulties were encountered, not the least of which was a running sand in the foundations, involving pumping for a lengthened period. The buildings are erected of red bricks and Portland stone, the shop piers being of polished Aberdeen granite. The shop-fronts are arcaded in cast iron, and are fitted with revolving shutters.

The whole of the internal finishings are of a better character than is common in similar buildings. The internal shop-fittings of pitch-pine, the gas chandeliers, &c., were all specially designed by the architect.

The works were carried out by Mr. William Macey, and the architect was Mr. F. Boreham, of Finsbury-pavement. The entire cost was something over 7,000*l.*



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OXFORD and CAMBRIDGE MANSIONS, N.W.

C. EALES & SON, Archts

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OXFORD & CAMBRIDGE MANSIONS

MARYLEBONE

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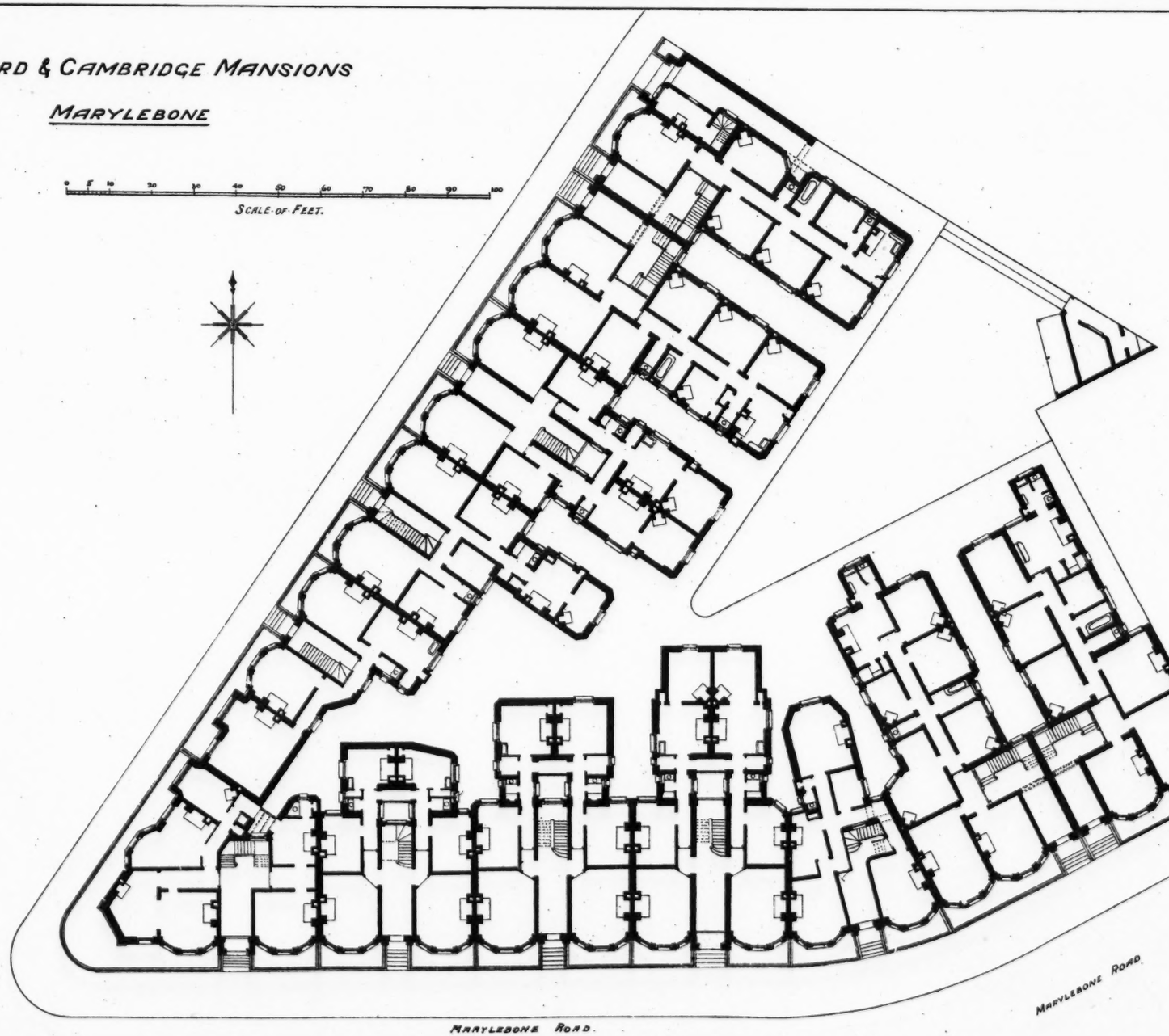
SCALE OF FEET.



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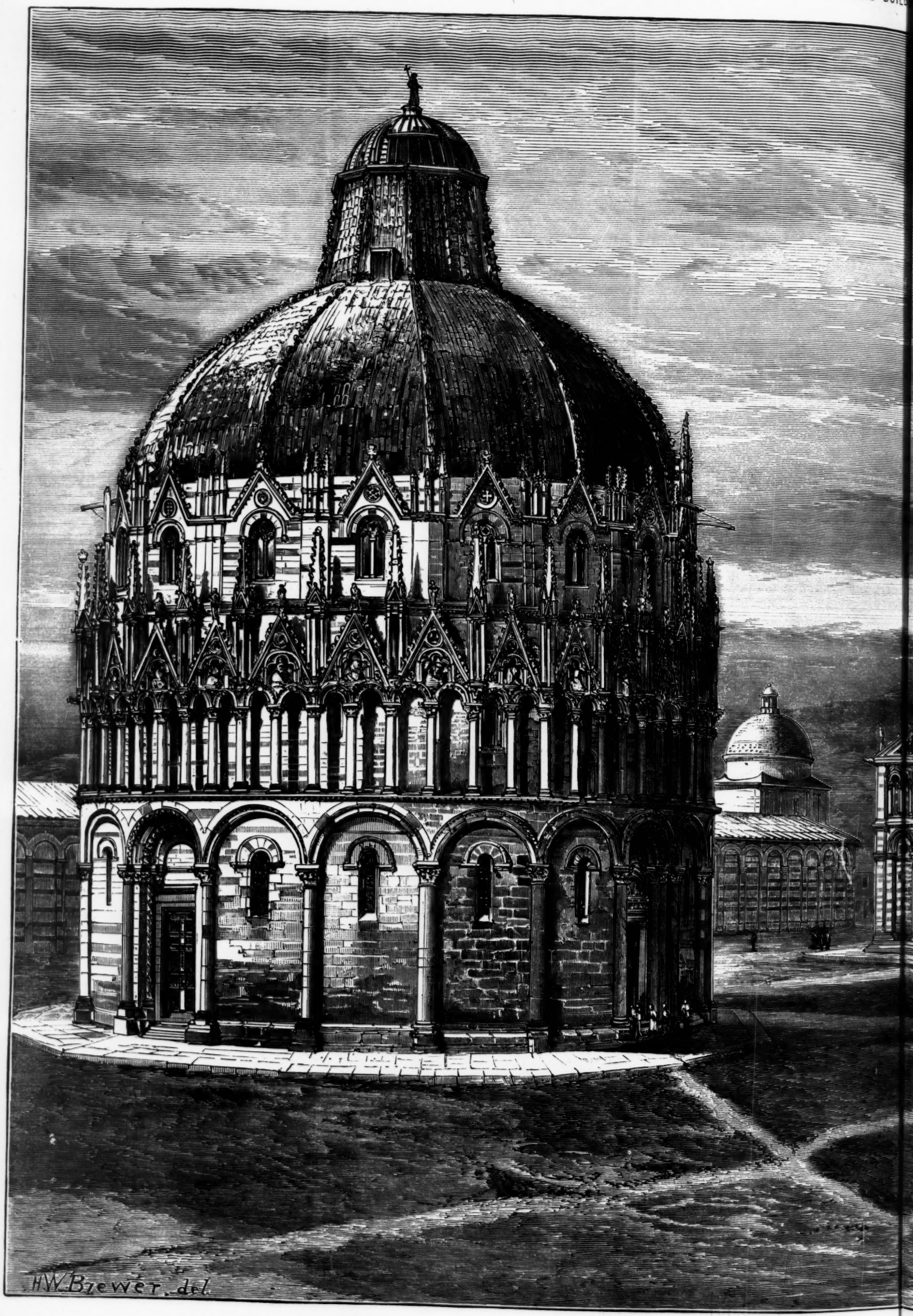
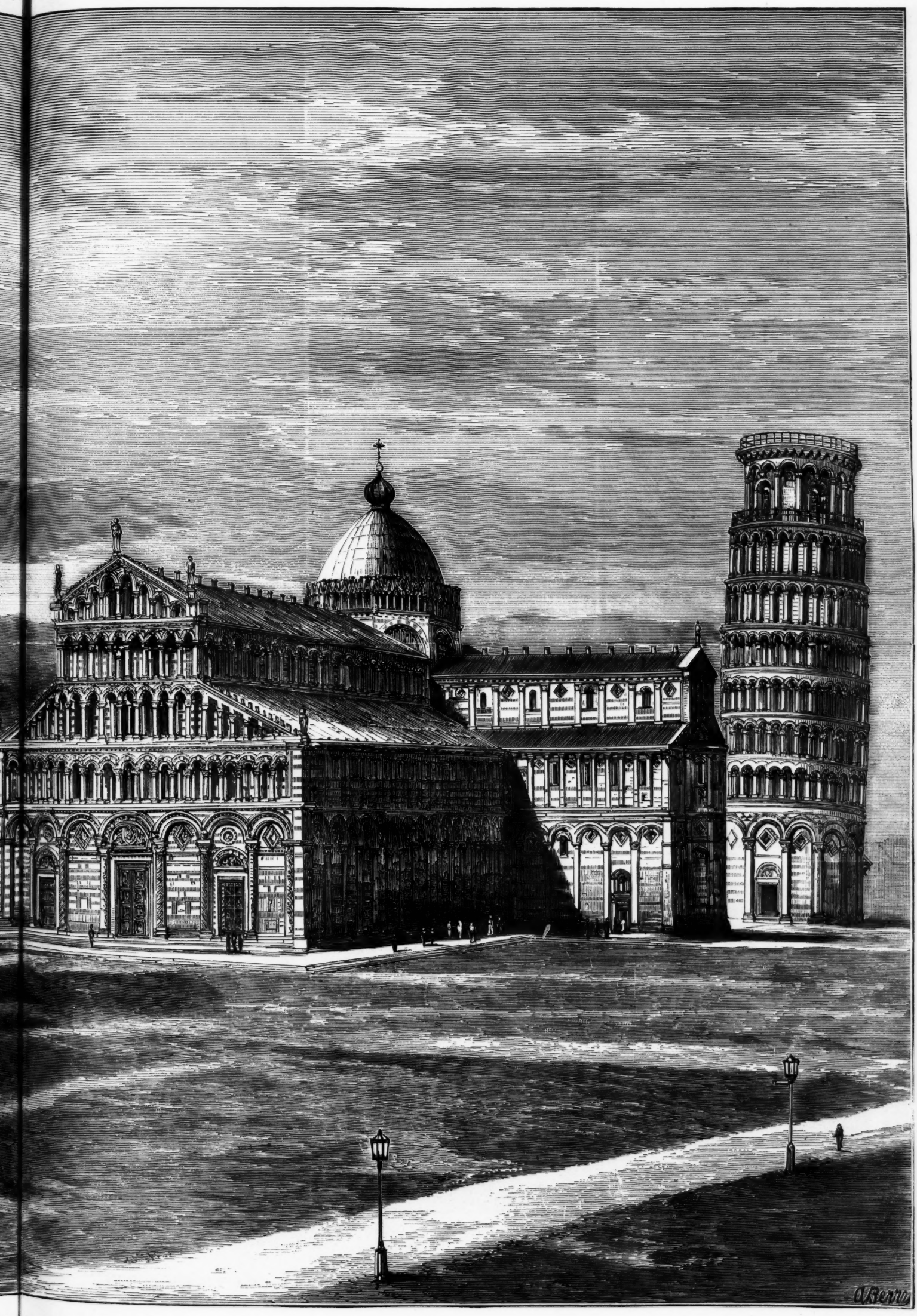
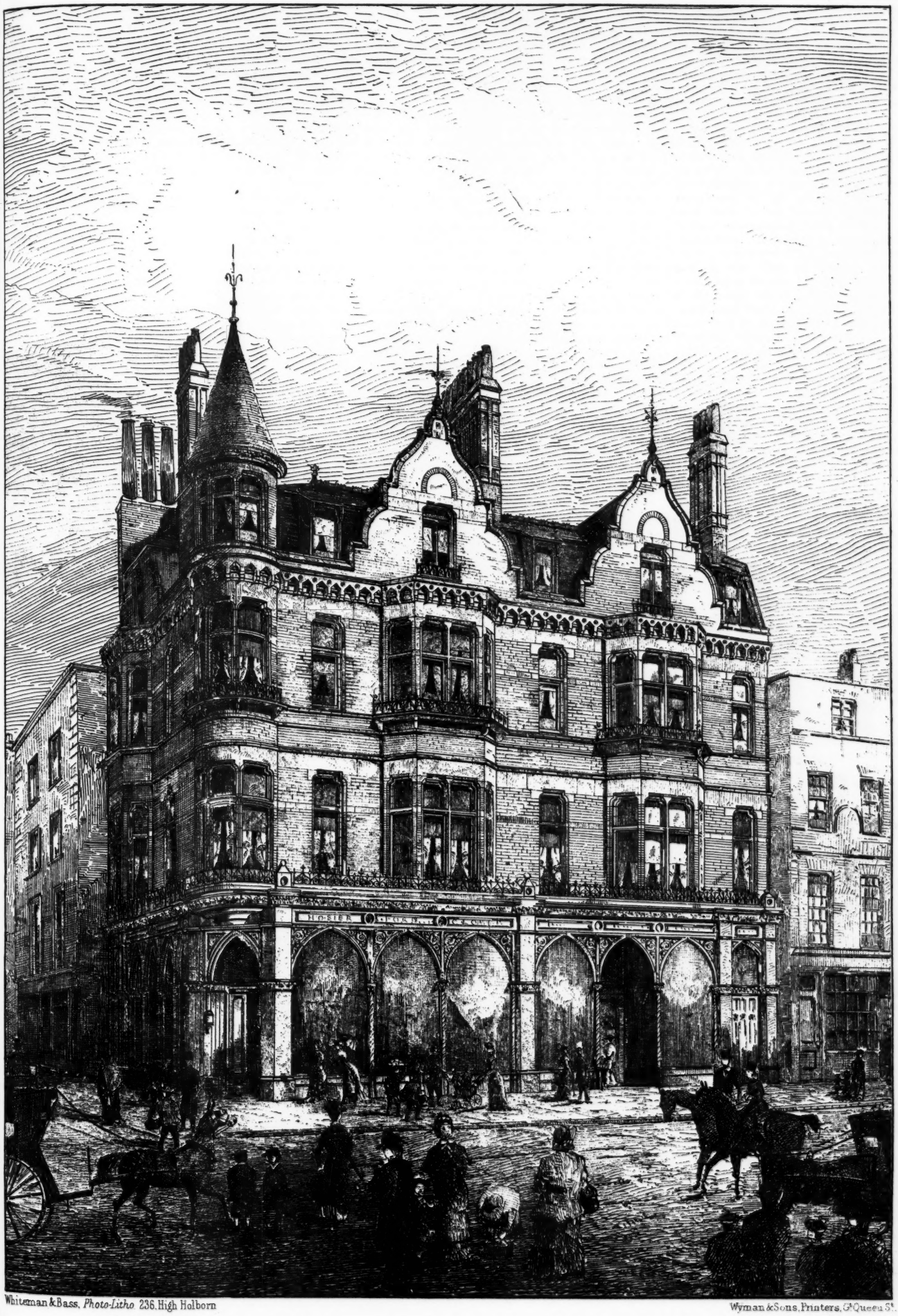


PISA: BAPTISTERY, CATHEDR



EDRAL, AND LEANING TOWER.



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LONDON STREET ARCHITECTURE: HOUSES IN OXFORD STREET.——Mr. F. Boreham, Architect.

LLANBEDR CHURCH, MERIONETHSHIRE.

IT is proposed to make some improvements to Llanbedr Church, Merionethshire. Llanbedr is situated between Barmouth and Harlech, in the hundred of Ardudwy. It is a little village as grey as a sea-gull, on the river Artro, close to the sea, and close, too, to a group of mountains that rise steeply on both sides of it till each peaked top is lost in the clouds. The river dashes and eddies and winds along its pebbly bed through the village, where it is crossed by a grey bridge of two semicircular arches, bearing a seventeenth-century date on a tablet. There is a little inn covered with ivy in a Dutch-like garden. There is a smithy, latticepaned, open-doored, and smutty. There is a tall cream-coloured chapel. There are pleasant houses, perhaps three shops, and a row of picturesque cottages facing the main street, and turning, at a right angle, behind tiny foregardens bordered with a low wall finished with Gibraltar copiug, to face the hurrying river also. At the centre of this rectangular line of cottages is a reading-room, and at one end is a bakery, both recent additions made to the village by a benefactor. And a little further on is the ancient church, silver-grey and very venerable, with its hoary lych-gate, and grassy God's-acre. The churchyard is full of slate tombstones, and rising above these is a fine granite cross. On a hill-side overlooking this scene is a six-gabled house very pleasant to look upon, with bay windows and an open porch, as well as a verandah, covered with creeping plants, and with glistening shrubberies and ornamental and rustic lodges to the right and to the left of it, called Hafody-bryn, the country-seat of one of her Majesty's Counsel, Mr. S. Pope. And here and there, up the valley of the Artro, are smaller solitary residences; and here and there, on the sides of the mountains, are more solitary houses, grey and high up, like eyries.

Cathrall, in his "Topography," thus describes the parish of Llanbedr-juxta-Harlech:—"In the cwmwa of Ardudwy, cantrev of Domodig, now called the hundred of Ardudwy, is a curacy, not in charge, with the vicarage (Ectoris Thesaurus says rectory) of Llandanwg. The resident population of this parish in 1803 was 319, and in 1821, 351. The rates in 1803 were 95*l.* 5s. 4d., at 5s. 3d. per pound. It is seven miles north of Barmouth and two miles south of Harlech; six or seven miles in length and four in breadth; and is very hilly, except near the river Artro, on which it is situated. The mouth of this river is by some writers represented as the place where Gwyddno Garanhir's weir was situated, and where the far-famed British bard Taliesin was discovered by his son Elphin, in a leather bag, attached to one of the poles of the weir. The prince took compassion on the infant and had him educated. The source of this river is near a place called Cwm Bychan, a most romantic little valley surrounded by high and magnificent rocks. Mr. Pennant visited an old gentleman named Evan Llwyd, whose residence was near a beautiful lake called Llyn Cwn Bychan, whose ancestors had been in possession of that property ever since the year 1100. One of these ancestors was present at the battle of Bosworth with Henry VII. A Welsh tune, called "Yma dawiad Dar Llwyd," or David Lloyd's farewell, was composed at his departure. Drws Ardudwy, close by, was a pass occupied by the sons of Cadwgan in their contests with the sons of Uchtryd ab Edwyn, whom they at last expelled from the country."

Llanbedr Church, like those of a similar antiquity in neighbouring parishes, consists of a nave and chancel, with a bell-turret on the western gable. It is small, close, and compact, dark and somewhat damp; and was probably erected in the days when Christianity was first embraced in the district. At the angles are huge stones, placed much in the manner used in England by masons in the centuries before the Norman conquest. There is no window opening in the west end. The ancient lights in other parts of the fabric have evidently been enlarged at different times. The doorway, which is on the south side, at the western end, is rough-arched, and over it is a slate tablet, affixed to it, thus inscribed in the Welsh language:—

> "Annedfaur cadarn nodfa côr treiniol
> Ger bron Duw ar dyrfa
> Er dim na thyned yma
> Y dyn oud a medwl da."

This stanza expresses a hope that no man will enter the privileged refuge before God and the multitude but with good thoughts. The interior of the nave is furnished with plain open seats to accommodate about 100 persons; close to the door is an old alms-chest, dated 1739, and inscribed with initials H.E., I.W., W.A.Y., the font, and a large bier, painted white. There is a pulpit on the south side, but neither reading-desk nor lectern, and close to the pulpit is a small harmonium occupying the place of a pew or seat. The chancel is furnished with a double row of seats likewise. On the walls, which are covered with whitened plaster, are three marble tablets to the memory of members of the Poole family, and near them is an aumbry with the coat of arms and motto of the same family, "*Spes falla cissima rerum*," painted on the door of it. On the south side of the nave is a stained-glass window, inscribed "*In gloriam Dei et memoriam Hannæ Pope*, 21st Nov., 1880. The east window is also filled with stained glass. Altogether, though there is an ancient open-timbered roof, there is an air of simplicity and bareness. There is no vestry, and the only substitute for one is a curtain.

To remedy the shortcomings in the matter of ecclesiastical requirements, and to impart a more finished and fitting appearance to the little structure, it is proposed to add a porch, a vestry on the north side, to remove the bare-looking plaster from the walls, and to insert a window at the west end, another in the nave, and a third in the chancel, to obtain more light. Furthermore, as the slating of the nave of the roof is imperfect, it is proposed to re-roof this portion of the building.

Within a couple of miles or so of this fabric, close down on the margin of the sea-shore, open to the winds and the sands, stands a similar ancient church, just as silver-grey and venerably beautiful of aspect, but abandoned and in decay. Many of its rich roof-timbers are in their places, others are lying on the ground, or rest, as they have fallen, against the walls. We may see the chancel roof was of the wagon-headed type, for there is a bay still standing, with traces of painting on it. There are two beams spanning the width of the nave, the one belonging to the ancient rood-loft, and the other to a more modern gallery; and there are long lengths of a carved cornice still *in situ*. There is the same extremely ancient rough-arched doorway here as at Llanbedr Church, only it is at the west end, and there is also a window opening on the south side formed in the same archaic manner. We may see, however, this edifice was enriched in the fourteenth century, when it was furnished with its handsome roof. The small ancient windows were then enlarged, and mullions and tracery put into the widened openings. There is also a lych-gate, scarcely injured by the hand of Time, at the eastern entrance to the surrounding churchyard, still roofed, and furnished with stone seats on either side. As we look upon its appealing aspect, we can but regret the exigencies that have caused this interesting structure to be abandoned. It is known as Llandanwg.

WINDSOR FOREST.*

YOU can scarcely speak or think of Windsor without calling up a host of associations. "Windsor is the Windsor of Chaucer and Shakspeare, as well as of the Plantagenet princes and Stuart kings." It is not only the "Windingshore" of the River Thames, from which circumstance it has its name; it is by common consent "Royal Windsor," the home of the British monarchy. New Windsor, so called still in law, is no newer than the time of William the Conqueror. It may be said to be Norman;—Old Windsor is Saxon. Some one mile and a half from the present castle, not, like its successor, on a chalk cliff,—"a steep chalk bluff, starting up from a meadowy margin,"—but far down, sheltered by its woods, amid the windings of the river, stood Edward the Confessor's lowlier dwelling, three miles from a ford, five miles from a bridge, and accessible only by bridle-paths. The first mention of the name Windsor occurs in an account of the miracles of the Confessor, written in the reign of the Conqueror. Since that day, from King William to Queen Victoria, there is not a sovereign but has ridden, driven, or hunted in this forest. Scotch, French, and Spanish monarchs have shared the chase. Here it is a pleasure to know that after the Battle of Poictiers, the captive French king had much alleviation of his captivity. Anon, says Froissart, he was removed from the Savoy to the Castle of Windsor, and went a hunting and a hawking thereabout at his pleasure and the Lord Philip, his son, with him.

You must allow me to gossip about things, which may have for you some of the great interest they have for me. I will attempt to lay out before you the extensive area of the forest. The difficulty, if you go back to early times, though not to the planting of its trees, is to know how to set bounds to that which was so long unenclosed, and without any visible boundaries. It is easy to suppose that in prehistoric times the whole tract of country south-west of the City of London was one large woodland or forest. It is so laid down in some of the maps, which profess to show us Roman, Saxon, and Norman Britain. Out of this wide tract were in time defined and recognised two woodland districts known to us as "Windsor Forest," in Berks, and the "Newer Forest," in Hants. The hunting of olden days was more like our shooting than our hunting. The hunting party did not depend upon the speed of their dogs to pull down the quarry. The dogs were to rouse the deer to bring him round to the open glade where the hunter was posted behind a tree, with his or her bow to get a good shot. The whole was not so very unlike what may take place now at the hot corner of a Hertfordshire pheasant cover. So it was in Henry VII.'s time, when he and Philip, the king of Castile, after dinner "went a hontynge in the lyttle parke wheare eyche of the kings killed certaine deare with their crossbowes." So it was in Bramshill Park, where the hapless Archbishop Abbott killed Lord Zouche's keeper with his crossbow. So it was in the earlier hunt in the New Forest, when Sir W. Tyrrell's arrow glanced (if it did glance) from a tree into the heart of the Red King. This tells us, in an indirect way, something about the date of the planting; for the tree which turned the arrow, we may be sure, was older than the days of Rufus's father's planting. He certainly could have done very little hunting in plantations of thirty years' standing, if the trees grew no faster in those days than in our own; and if they were planted as now, when it is customary to put 108 to the acre, with nurses of Scotch fir and larch 4 ft. apart.

We are sure that William the Conqueror did not begin Windsor Forest, for in the reign of Edward I. (say 200 years after the Conquest) an order was issued to the constable that he, with the assistance of the foresters and verderers, should sell the "old dead oaks" in the forest, and they hardly could have called for removal had they not seen the Saxon and Dane in the land. We take, then, Windsor Forest to have been the gradual appropriation and arrangement of all that woodland district stretching into Berkshire eastwards, south, and south-westwards of the castle, which stands on the extreme east of the county. The river Thames is the boundary of the castle domain on the east or north-east, and this river separates Bucks from Berks.

The present aspect of the forest dates from its surrender to the nation, about 1813, when commissioners, afterwards succeeded by the present Commissioners of Woods and Forests, became the landlords on behalf of the people. The Sovereign accepted a civil list in lieu of the old hereditary domains. 1,990 acres of land were sold to pay compensations and expenses, and 25,000*l.* worth of timber was cut down and sold for the same purpose. A certain area was reserved for the use of the Sovereign, and some 3,000 acres were planted as timber nurseries for the use of the nation,—for the navy. The forest then included eleven whole parishes, and entered into six others. We reckon that the Little or Home Park consists of 500 acres, and the Great Park of 3,000 acres, and all enclosures of forest and park equal 14,000. This is still a royal domain, but an annalist of Windsor thinks the arrangement of 1813-19 was the extinction of the forest,—an enclosed area seemingly ceasing with him to be a forest. "The forest of Windsor has," he says, "ceased to exist, though, for convenience sake, the name is given to the district south of the castle." So far as I have seen, every portion of the forest is marked out now by some earth mound and ditch, if not by other fence. It must be con-

* From a lecture before the Hertfordshire Natural History Society, by the Rev. Canon Gee, D.D., Vicar of Windsor.

fessed that the tourist will see very little, if any, portion standing out wild and unenclosed, but there is no derivation of the word "forest" which makes enclosure fatal to the idea. Professor Skeat, however, gives a quotation from Mediæval documents, showing that in those days the distinction between forest and park was understood to be that the one was unenclosed and the other enclosed.

The Long Walk is the largest avenue in Europe, and consists of elm trees planted in the reign of Charles II., though the ground was not appropriated until the reign of Queen Anne. It was in the time of King Charles a common, and it is only within our times that the Prince Consort arranged an exchange by which a road to Datchet was closed, and all that side of the castle became private ground. The elms are not quite so old nor so fine as those in Eton Playing-fields. The Etonians were planted by Provost Rouse in the time of the Commonwealth, and the circumference of the largest is 18 ft., while that of the largest in the Long Walk is about 14 ft. Their present condition confirms the statement that the allotted age of an elm is about 200 or 250 years. By that time the insect specially infesting them, the elm beetle, has done his work. The tree has no deep tap roots,—the roots are largely spread upon the surface;—the leverage of the full branches is immense. The wood appears to be brittle, and a heavy gale either snaps off a large limb or uproots the giant altogether. The elms at Windsor seem to be condemned. A few years ago a poor man sitting underneath was killed by one which fell unexpectedly. Since then a notice-board warns all strangers that they sit at their own risk; dating from that event, frequent removals have taken place. Not a winter passes but some three or four are executed. We look pityingly on, for the trees felled appear to an outsider to be as sound as they are evidently grand; and they are necessarily replaced by striplings of the size of one's wrist,—the earliest to sit under the shade of such will be our grandchildren, if not our great-grandchildren. There are two rows of trees on each side; the avenue is in that sense double, and is 70 yards across from outside to outside. There were originally 1,652 trees.

The Great Park is not entered until you reach the double gates; then you are about halfway to the statue of George III. by Westmacott, erected by George IV., "Georgio Tertio Patri Optimo Georgius Rex." Here the ground assumes the widespread look of a large park. We find fault, saying that the park is almost too large for pedestrians;—it takes too long to reach its beauties. If only a short time can be given, it is better to make for the Crown Cottages and be content with Queen Anne's Drive,—a charming avenue with grass between the trees, and a fair substitute for the Long Walk. In either case it is necessary to go through the park to get at the forest. There are charming residences within its inclosure;—especially Cumberland Lodge, the residence of Prince Christian, named after William of Culloden, who resided here, and did much planting and laid out the large piece of water known as Virginia Water. It was close to Cumberland Lodge that George IV. buried himself in the Royal Cottage, of which the conservatory and some apartments still remain.

General Notes on Trees.—In speaking of individual trees, I will divide or class them according to their claims to mention, whether from their size and age, or from their historical interest. In the splendid work published by a late deputy-surveyor, Mr. Menzies, the interesting trees are classed as "Veterans of the Forest," or as "Royal Trees," and I will do something of this kind also; saying, however, a word or two as to the growth of trees generally. A record has been kept, at least for the last few years, of all planting; more than this, iron tablets have been placed near each plantation, to inform the public of the date of its being begun, so far as this can be ascertained. Our descendants will derive much information in this way as to the growth of different timber. Trees, like children, thrive differently, even under precisely the same circumstances; and, of course, very differently in different circumstances. A tree grows much more slowly in a cold clay soil. If I were to go to a dated plantation, and take the finest or the poorest, I should draw a very different conclusion if I made the one the measure of progress, or the other. I have uniformly taken an average, but good specimen,—a healthy, fair instance of what might be expected. I find that sixty years, dating from the planting which followed upon the inclosure and new arrangement, is only sufficient to produce an oak of 4 ft. circumference, or, say, 16 in. through or across,—thus the growth of the oak is very slow. Trees that measure 20 ft. and 25 ft., not to say 30 ft., round, may be allowed all the age with which they are credited. Mr. Menzies reckons that fifteen years,—*i.e.*, fifteen consecutive rings,—go to each inch of radius. This would give 540 years to a yard, and would make a tree 6 ft. through and 20 ft. round, including bark and knots, to be just that age.

The whole character of a tree depends upon whether it stood at the first out in the open, or was in earliest days "cribbed, cabined, and confined" by very close neighbours. I am inclined to think that a dense neghbourhood, such as leads the tree upwards for light and air, is very favourable for timber, otherwise the tree branches too soon. Some of our largest oaks have a stem not exceeding 6 ft. or 5 ft. in height; this hardly seems the consequence of soil, as you will find trees widely different in character standing within 100 yards of each other. The tallest and best grown oaks in this sense are at a place called "Cawpond," not far from Cumberland Lodge, and close to the Rhododendron-walk. There is the oak which is at this present moment the best grown and in the best condition. It is about 70 ft. high; it does not throw a branch (not counting twigs) until the height of 40 ft. is reached; it is only 11 ft. 6 in. in circumference, and its age is taken as about 175 years. A distinction is made by foresters between a "Maiden" and a "Trained tree." The former has never been moved; it stands where the acorn from which it sprang was first dropped; it also has never been browsed, or cut for food for the deer. This seems to be really the original meaning of the term "*Vert*" (rights of *Vert* and *Venison*),—a cutting down of green branches for the deer in the winter. As the forester's perquisite lay in the branches when browsed, the trees suffered sadly from wanton clipping. The trained tree was reared somewhere else; it was begun in some nursery, and then at a suitable age was brought out and planted. It follows that while the interest of the maiden tree is greater, the promoted tree is more developed. The greatest height which Mr. Menzies claims for a maiden oak is 65 ft., while the height of a young oak which is, I believe, a trained tree, is 100 ft.

THE DOME OF ST. PAUL'S.

As there appears to be much reason for doubting whether Wren contemplated such a treatment of the dome as we may conclude is intended by the sub-committee, the following considerations may be worth attention. By this proposed treatment the dome would be divided into eight or more vertical parts by means of arabesque ribs, the divisions or compartments thus formed being filled in with separate pictures.

But, looking at Sir Christopher's actual details as his own part in the work before us,—what is the indication, if not the proof, of his intentions? A little study of these appears to lead to a conclusion that can scarcely be upset by criticism.

The internal architectural design as a whole consists of eight grand piers and arches at the base, surmounted by a circular drum or frieze, of little comparative height, and divided in its periphery into sixty-four parts, consisting of pilasters, panels, and window openings; and finished with an unbroken cornice marking the sphere of the dome at its base. Is it not clear from this that the designer considered that there could be no more beautiful termination to the work below than the grand sweep of this unbroken cornice, and that, in fact, he left the work,—so far as architectural details were concerned,—complete and perfect in itself at this line? The critical architectural eye demands nothing more. We instinctively expect the painter's aërial powers. Then it is a matter of fact that Wren left the dome itself a plain and smooth uninterrupted sphere, a fact which can only be interpreted in meaning that, in his opinion, the artists to come after him should, at least, be unfettered by any mechanical obstructions in carrying out a grand pictorial design distinguished by unity of motive. It is a strong additional argument that this was his opinion, that within bow-shot of St. Paul's he had already erected, at St. Stephen's, Walbrook, a dome with ribs,—doubtless, under the conviction that the funds for pictorial decoration would never be obtained for a small parish church. The conclusion, therefore, seems to be irresistible, that if Sir Christopher Wren had been now living he would have opposed any interference, by the introduction of vertical ribs or otherwise, with so grand a form as he had provided for the exercise of artistic genius in the unbroken sphere of his dome; and that he would have recommended that the proper principle of dome painting to be followed was that established by Correggio at Parma, and which caused the greatest painter of his time to exclaim, "If I were not Titian I would be Correggio."

St. Peter's at Rome has five zones of subjects, and although there are ribs they have been kept very subordinate in the general effect. On the other hand, Raffaelle, at Sta. Maria del Popolo; Guercino, at Pistoja; Guido, at Ravenna; Cinagni, at Forli; Pordenone, at Piacenza; Lanfranco and Domenichino, at Rome; and numerous others followed the example of Correggio in aiming at unity of effect, and avoiding vertical subdivision, which would seriously interfere with the heavenly character of the subjects so appropriately chosen for the decoration of a sphere. The subjects painted upon these Italian Renaissance cupolas would, of course, be inappropriate in England, but in St. Paul's conversion and active life an artist would, doubtless, find a sufficient number of striking incidents for the decoration of our metropolitan dome.

All that is here contended for is a principle, *i.e.*, that the dome of St. Paul's should be painted in one or more spheres or zones,—that the grandeur of its form should not be frittered away in a number of compartments, which would certainly tend to give it a mundane instead of an appropriate heavenly character, suggested by its form and position.

The treatment here suggested will give the opportunity of the figures being on a sufficiently large scale to be intelligible from below, which would not be the case if the artist should be limited by eight or nine ribs on the circumference.

In short, the possibility of a grand and magnificent result will be lost for ever.

H. De Sivart.

BUILDING NOTES FROM BRISTOL.

Several large city churches in Bristol are in the builders' hands, and will, when again opened to the public, be found to have undergone considerable alteration. In the case of Christ Church, Broad-street, the plans on which the alterations are being carried out are those of Mr. Henry Williams. The church, which is in the Grecian style of architecture, has a very ancient history, and it is said that in 1174 William, Earl of Gloucester, presented the living to the Priory of St. James and the Monastery of Tewkesbury. The fourteenth-century church, which was, judging from an old engraving, of considerable beauty, was destroyed a little more than 100 years ago, and the statue of a Saxon Earl, seated in a niche, which was found walled into the front of the building, has been regarded as that of the founder of the church. The structure now being improved is of freestone, and was opened in 1790. Nearly the whole of the old-fashioned interior arrangements, including high back seats and dingy fittings, have been removed; the old wooden sashes have given place to several stone windows filled in with stained glass; a fine stone reredos takes the place of the former wooden one; and a centre light of the new window at its rear delineates the Ascension. The internal decoration of the roof has a good effect, and care has been taken to harmonise it with the other parts of the building. The chancel floors are to be laid with Minton tiles, and separating the chancel from the nave will be built a low open screen of marble and freestone, with brass gates. The choir stalls, &c., will be handsomely carved, and the choir has been entirely reseated. The cost of the work will be about 2,000*l*.

St. Nicholas Church, which is also in course of improvement, is the third that has existed on the same site, and the most distinguishing feature of the present building is its lofty spire, standing 205 ft. high. This church is also interesting to local archæologists. In the present alteration the western gallery and the old vestry will be removed, and a chancel will be formed

with a freestone screen. The organ will be removed to the east end, the seating arrangements slightly altered, and other work attended to which will much improve the church. The total cost is put down at 1,600*l*.

The proposed Bristol and London and South-Western (Junction) Railway is creating quite a stir in Bristol, where the want of central railway accommodatian has for many years been deeply felt. Public meetings have been held in all parts of the city, and from the universal approval expressed to the principle of the scheme, there is little doubt that it will pass the Select Committee of the House of Commons, and before long be in a fair way of being accomplished. The new line starts from the village of Grateley, a few miles this side of Andover, on the South-Western system; thence it cuts across to Westbury, in Wiltshire, bringing many places not now connected with railways into communication with the system. From Westbury it will run to Radstock, where a junction will be formed with the Bristol and North Somerset Railway. This railway will be doubled, and the traffic will run over it as far as St. Philip's Marsh. There the North Somerset line sweeps round to enter the Temple Meads Station, but the new line will be continued on archways and bridges through St. Philip's. It will cross over the Great Western Railway in St. Philip's, and will proceed right into the centre of the city. It is proposed to arch over a portion of the float between the stone bridge and the drawbridge, a water area which has been chiefly used by small coasting craft, and on the site so formed to erect a commodious passenger station. The removal of the present narrow drawbridge, with the evils attendant on the stoppage of the traffic when it is swung open for vessels to pass through, will be effected if the scheme is carried out. A goods station will be built in Lewin's Mead, and arrangements made to connect the line with the docks. A station will be opened in the heart of St. Philip's. It is stated that the promoters of the line will have, in order to carry it out, to acquire over 1,000 houses, but the majority of these are small tenements, and there are many old-fashioned dilapidated buildings which ought to have come down years ago. A very large number of streets will have to be crossed on bridges, and a handsome structure, of 100 ft. span, is contemplated in Old Market-street. The line is estimated to cost 1,500,000*l*. The site of the proposed passenger station is right in the centre of the city, while the present joint station at Temple Meads is nearly three-quarters of a mile from the centre. The advantage of having a more central London terminus than Paddington will also be considerable.

The Great Western Railway Co. have for years been pressed to provide a railway station for Bedminster, a district through the heart of which the old Bristol and Exeter line passes. The company are now advertising for tenders for this structure.

To accommodate the Severn Tunnel traffic the same company are seeking powers to widen the Bristol and South Wales Union Railway.

The Clifton Club has been reopened with a ball, after having undergone extensive alterations.

The east wing of the New University College, Bristol, has just been completed. It has been found necessary to make a material departure from the designs of the architect, Mr. C. F. Hansom, and instead of a complete quadrangle, with an elaborate façade on the left side as originally intended, there will now be an open quadrangle of three sides. In consequence of this alteration the east wing has a front view, and has been, while retaining the Tudor style, much more richly treated than its first plans provided for. Possibly at some future time the north wing will be similarly treated to make it harmonise with the portion just completed. The two corner blocks of the open quadrangle abutting on the road will now be made of rich and ornamental design, and will be the features of the building. They will, however, not be erected till the south wing is complete. The new wing includes a lecture-room 48 ft. by 26 ft. and 17 ft. high; a laboratory, 46 ft. by 30 ft.; a second lecture-room, 35 ft. by 30 ft. and 20 ft. high; as well as a large number of rooms for classes in the various branches of study. The laboratory provides accommodation for seventy or eighty students experimenting at the same time, and an exhaust fan is applied to this room to draw off the gases and fumes liberated in the laboratory work. The contractors are Messrs. Howell & Son.

An interesting discussion has been raised in Bristol by complaints of the disagreeable odours arising from various factories in St. Philip's, including the effluvia of barilla, gas waste, grease-melting, manure-factories, oil-boiling, varnish-making, &c. The medical officer of the city (Mr. Davies) maintains that, disagreeable as these odours undoubtedly are, there is no ground for alleging they are unhealthy. The rate of mortality for the whole city was, during the year, 19·1, and that in St. Philip's only 16·6. The death-rate of Brighton was 2·4 per thousand more than that of the densely-crowded district where these factories existed. Some authorities explained these singular facts by supposing that gas refuse and other odours were beneficial in certain complaints. Hygiene and æsthetics were not always conjoined; human beings throve and multiplied in St. Philip's, but he had never seen sunflowers or lilies there. The local authority declined to take any proceedings to stop the alleged nuisances after hearing the officer's report.

Several Bristol builders have been lately busy on new business premises in various thoroughfares that have been widened for street improvements. Buildings of florid design and constructed of many-hued bricks seem rather popular among those erecting new business premises.

Part of the Almshouses at the top of Christmas-steps, the western portion of which was improved in 1873, is being rebuilt by Messrs. Cowlin & Sons, from the designs of Messrs. Foster & Wood. The premises had an ancient origin, their founder being John Foster, who flourished amongst Bristol magnates in 1481. An interesting feature in connexion with it is the chapel dedicated to the Three Kings of Cologne, which was built in 1484. This chapel is being renovated. The work is expected to be completed in the autumn.

In building the new Trade School in Unity-street, College-green, the workmen of Messrs. Brock & Bruce came upon a piece of paving of encaustic tiles of very ancient design. It is supposed, from their appearance and situation, that the tiles formed part of the floor of the transept of the chapel which formerly stood on the site, and which were afterwards put roughly together, in the position in which they were found. Near the same spot a large stone coffin was found with the bones of several persons. Other human remains have been found in what, no doubt, was formerly the burying-place of the Hospital of the Bons Hommes or Begging Friars.

The St. George's School Board, the Bristol School Board, and the Bedminster School Board are all contemplating building new schools or additions to the old ones; and the Bristol Board have now in course of erection several large buildings.

THE USE OF TIN-PLATES IN BUILDING.

TINNED iron is protected from rust only as far as it is covered by the tin, and any portions which the tin does not cover, either from original defects in manufacture or from subsequent wear, are liable to rust. They rust even more rapidly than untinned iron, because the contact of iron and tin produces a galvanic connexion; the former being positively and the latter negatively electrical. Thus when exposed to damp the positively electrical metal is specially affected by the oxygen in the water. Hence the oxidation or rusting takes place.

Herr Karmarsch, in his "Handbook of Mechanical Technology," gives the above explanation of the process of oxidation to which tin plates are subject, and to the diffusion of knowledge on this point the diminution in their employment for the purpose indicated has been attributed.

A leading organ of the German metal-working industry maintains, however, that tin-plates have as a rule been found durable. The somewhat lighter tinning of the plates now produced does not really affect their durability, it is argued; inasmuch as they are rarely used without being painted. Besides, it is remarked that a thicker coating of tin can be given if orders for this special make are placed in sufficient quantity; while the so-called dull plates covered with an alloy of tin and lead are specially recommended for use in building.

THE BRADFORD CHIMNEY DISASTER.

THE inquest * was resumed on the 25th ult., before Mr. J. G. Hutchinson, Borough Coroner, assisted by Lieutenant-Colonel Seddon, R.E., on behalf of the Home Office. Mr. E. Tindal Atkinson, barrister, appeared for the trustees of the late Sir H. W. Ripley, owners of the mill; Mr. Scott, solicitor, represented the relatives of some of the deceased.

Mr. Francis Haley, of Vere-street, Bowling, steward to the trustees of the late Sir Henry Ripley, was among the witnesses examined. He said:—During Sir Henry's lifetime I acted for him. I had no connexion with the erection of the chimney. The property first came under my care nine or ten years ago. As a rule, it was my duty to bring all matters connected with repairs before Sir Henry, while Sir Henry was in Parliament and at Bedstone. Within the last two years he came over once a month or six weeks to look over his property. On each occasion I went round the mill property with him, and he minutely examined all the works and pointed out what repairs he thought necessary. During my stewardship I am not aware that any pointing or repairs were done at the chimney which formed part of the property. For the last ten years I have been in the mill-yard and have seen the chimney. I saw cracks in the angle of the chimney 13 yards or 14 yards from the ground, and about two yards along. I could scarcely have got my finger into the cracks. I drew Sir Henry's attention to them the first time he came. He did not consider it to be of any importance, and no instructions were given to me in reference to it. I noticed a further crack on the east face of the chimney about twelve months ago. It commenced about seven yards from the ground, and continued upwards about ten yards. The other crack was still there. I drew Sir Henry's attention to the second crack. I do not recollect any remark he made, or how long it was before he came. I observed nothing more of importance till Wednesday, the 20th of December, when, as I was passing up the mill-yard and looked at the chimney, I could see daylight through a bulge. I saw daylight between the two cracks, which were between two and three yards apart.

Had any part of the outer case then fallen?—No.

How far did the bulge extend?—Two or three yards in length.

Did you see any other cracks?—No.

Had either of the two cracks increased in width?—The one I had first observed appeared a week or two before to be wider. The chimney seemed to lean to the south-east.

Had you ever any complaint from any of the tenants or others as to the condition of the chimney?—I have no recollection of any before the 1st of December last.

Examination continued.—In the interview I had with Mr. Humphries on the Wednesday he said that when the chimney was straightened the throughs were broken for 10 yards or 12 yards, and that his foreman, Miles Moulson, had told him so. I said, "I should like to hear him say that myself." He took me to Moulson, who said the throughs were broken when the wedges were withdrawn. I met Mr. Fred Ripley by appointment on December 21st. Mr. Humphries was with us. Mr. Fred Ripley went to the place where I had seen daylight through the bulge, and looked at the chimney. Mr. Humphries said, "I think it is the outer case that is leaving the chimney. I do not think there is any danger of the chimney falling." He told Mr. Ripley what Moulson had said about the throughs. Mr. Ripley went to Miles Moulson, who again described how the throughs had been broken. Mr. Fred Ripley, turning to me, said, "Who is Mr. Humphries?" I answered, "He is a man I have great confidence in as a practical builder. In his earlier days he has done the practical part of chimney building himself." I afterwards observed to Mr. Fred Ripley, "We must have some professional man; I do not understand chimneys." He then said, "Whom do you consider the best man in Bradford to give an opinion on a matter of this sort?" I turned to Humphries, and asked whom he considered to be the best man to give an opinion on the matter. Mr. Humphries replied that he thought Mr. Andrews was as good a man as could be got. His firm were the architects for the chimney,

* See pp. 60, 90, 126, *ante*.

and had built as many chimneys as any firm in Bradford. At the suggestion of Mr. Fred Ripley, I asked Mr. Andrews to meet Mr. Fred Ripley and myself at three that afternoon. Mr. Andrews came at the time fixed, and looked at the chimney at various points, ascending a ladder which was against the stable. He then consulted with Mr. Humphries, and afterwards said there would be no danger in taking down the bulge. It would be well, he said, to go into the flues during the Christmas holidays, to see if there were any cracks inside the chimney. No orders were given at that time as to what was to be done to the chimney. I and Mr. Fred Ripley and Mr. Andrews met on the following morning. We examined the plans of the chimney. It was decided that the bulge should be taken out on the Saturday, after the mill hands had left. Mr. Fred Ripley told me to order Mr. Humphries to do the work as arranged. I told Mr. Humphries that I should be there to see him when he commenced work. I watched the taking down of the loose portion of the chimney on the Saturday, after which I wrote to Mr. Henry Ripley. I saw that the inner coating was sound, and I formed the opinion that there was no danger. I told Humphries to make a good job of it, and do it quickly. Mr. Humphries asked, "Do you wish my men to work on Sunday?" I replied, "Every hour of daylight until it is finished." I then wrote to Mr. F. Ripley. Mr. Andrews was at the place on Sunday at noon; I was there three times on the Sunday, and saw the men at work. On Sunday I complained that the men were going on slowly, but Mr. Humphries said it was very risky, and that he dare not trust his men under till scaffolding was put up. The men afterwards left work on account of the rain. I made no further communication to Mr. Henry Ripley. He was at the mill on the day before the chimney fell. After I saw that the inner case was sound on Saturday, I left the work entirely in charge of Mr. Humphries. I next saw Mr. Andrews at the place on Sunday afternoon.

By Colonel Seddon.—I have never heard of. any examination of the chimney; in fact, it never has been examined for six or seven years. A man went inside the flue to clean it every eighteen months. I thought that the damage was confined to the outer case, and that therefore there was no cause for alarm. I ordered the work to proceed as quickly as possible, not because I apprehended danger, but because I wished it to be done before the hands came on the Wednesday morning.

Mr. William Beanland, Horton-lane, builder, said that he examined the chimney at the request of Mr. Andrews, and that he agreed with the evidence of Mr. Andrews and Mr. Humphries.

By Lieut.-Col. Seddon.—I would not have constructed a chimney of such materials as this. My opinion is founded on what I saw of the chimney both before and after it fell. The outer shell would have been better if the wall stones had been broader on the bed. The throughs were mostly broken. The packing was very common, and should have been of solid brick.

On the 26th ult., Mr. W. H. Greenwood, one of the members of the firm of Messrs. Greenwood & Co., who occupied part of the Newland Mill, and several of whose workpeople were killed by the fall of the chimney, deposed that he observed slight cracks in the chimney almost from the time of his taking the mill, ten years ago. In October last he noticed the cracks had increased in width, and he spoke to Sir H. Ripley's agent, and advised him to have the chimney examined. Mr. Haley subsequently told him that an examination showed that the chimney was perfectly safe, the outer shell only having given way. About a week before the accident he again complained to Mr. Haley, and either immediately, or within a few days afterwards, he saw workmen employed on the chimney. It was also agreed between them that Mr. Moulson, a builder, should be called in to examine and report on it. Getting nervous about the state of the chimney, witness took the precaution of increasing the insurance upon his life. To prevent injury from the falling of bricks from its bulged shell, he also removed his horse from the stable near the chimney. A day or two before the accident he pointed out to Mr. Webster Moulson, the builder engaged in its repair, that it leaned over on the side where the bulge was, but Mr. Moulson said he had plumbed it from Castle-street, and found it to be straight. Mr. Moulson assured him the chimney was safe.

Mr. William Humphries, a member of the firm which originally built the chimney, said some months ago Mr. Haley asked him to look at the chimney. There was one small crack in it, such as was to be found in most chimneys. Witness said, "I cannot tell anything until we go up to look," but this was not done, and no repairs were executed for some time after. Last October witness was engaged on some of Sir Henry Ripley's property, in the neighbourhood of Newlands Mill, and several times "sighted" the chimney. He noticed, at the same time, that the chimney had lost its "batter," and was leaning towards Castle-street. He never mentioned the subject to Mr. Haley, although he saw him frequently. On the Thursday before Christmas Day Mr. Haley called him to look at the chimney. A portion of the outer case seemed about to fall, but the inner case exposed appeared perfectly sound. He feared some of the outer case might come down, but he never thought there was any danger of the chimney falling. From his examination of the ruins, he had come to the conclusion that the work was as good as could be expected. The material used, however, was of the commonest kind above ground. The backing below the ground was very good, and it could not be got out without wedges. As a practical man, he did not think the foundations had anything to do with the fall of the chimney. He should have no hesitation in building a chimney of the same bulk as the fallen one upon the present foundations, but he should not like to build it in the same way, because the three parts of the chimney would not settle together. At witness's suggestion, Mr. Andrews, a member of the firm of architects who built the chimney, was called in, and both of them came to the conclusion that only the outside shell was affected, and that the chimney was perfectly safe.

By Mr. Scott.—From what he had seen of the red brick lining in pulling down the stump of the chimney, he was of opinion that if Mr. Andrews and himself had examined the inside instead of only examining the outside of the chimney, they would have come to exactly the same conclusion.

The proceedings were continued on Monday last, when Mr. Webster Moulson, of 46, Holme Top-lane, Horton, a member of the firm of Humphries & Moulson, contractors, was the first witness called. Examined by Col. Seddon, he said:—My opinion is that the fall of the chimney was entirely due to the dislodgment of the stones and the crushing of the masonry at the point where it was cut into, and that if it had not been cut into it would still be standing, although it might have gone 12 in. or more out of plumb. I ground this opinion upon my knowledge of other chimneys, similarly constructed, still standing, although they are more out of plumb. I formed the opinion that the chimney got out of batter through the action upon the point where it had been cut through, caused by the continual rocking. The chimney had been weakened at this point.

Mr. John Waugh, Associate of the Institute of Civil Engineers, practising at Bradford, said that he had assisted Lieut.-Colonel Seddon in his investigation respecting the fallen chimney. He was first on the ground on the 9th of January, when he saw the stump of the chimney and the fallen *débris*. The material of which the chimney had been composed was very much crushed and broken. He found a greater quantity of powdered lime than he had anticipated. He did not find any large portions of the chimney adhering together. There were also more large lumps of mortar, evidently from the hearting or backing, than he expected. He noticed that the lime in the mortar had not been riddled. The mortar used for the outer casing was of a much better quality, and had been riddled. That also applied to the mortar on the red-brick lining. He found some of the mortar and the stones in the backing coated with soot, which he also found upon some of the stones that had formed the outer casing. Some soot-stained stones were among the *débris* on the side of the yard towards which the chimney fell, and others near the base of the chimney. The outer casing seemed to have been well jointed. On some of the joints he found both mastic and cement, which indicated that the chimney had been repaired at some time. Generally speaking, the stones he found in the ruins had less of mortar upon them than he expected.

The Coroner.—Can you form any opinion as to the cause of the cracks in the fire-brick lining?—The cause was settling of the chimney in more than one direction. This settling might be attributable to the wind, to the subsidence of the foundations, or the operation of straightening the chimney. Any of these causes would be assisted by the natural expansion of the fire-brick lining itself, as a result of the heat from the flues. This should have been left to expand independently.

To what do you attribute the bulging of the chimney, as described by the witnesses?—To the subsidence of the backing or hearting. This subsidence has taken place on the sides where the cuts were made. At first there would be cracks caused by compression of the hearting, followed by cracks and bulges. I should expect the breaking of the throughs to follow as a consequence of this subsidence. There would, however, be plenty of throughs higher up that were not broken. The outer case would still have a tendency to support the structure, but that support would be diminished when it began to bulge out.

In your opinion what was the cause of the fall of the chimney?—In my opinion the fall of the chimney was attributable to the mode adopted in straightening it. The first cut was made between the lower "eyes" and the lower long panels. The mode adopted, as described by the witnesses, was in itself calculated to put a limit to the existence of the chimney, which ought to have stood almost for all time. By the drawing out of the iron wedges after the first cutting, the chimney was brought over to the other side, and more than half its weight thus came upon that side. The second cutting was the death-blow of the chimney, as it shortened its eye very materially. The chimney was cut through twice at points about 3 ft. apart. After that the bottom of the chimney would be as solid as rock, and all the vibration would be upon the space between the two cuttings, which would be gradually pounded and crushed by the weight above, some 2,200 tons, or equal to 6·8 tons per superficial foot, supposing the weight to be uniformly distributed. In periods when a high wind was blowing, however, the weight might be brought almost entirely over upon the side where the cutting took place, and the pressure per superficial foot would be at least double. When the wind blew the chimney would rock, as all chimneys rock, and the material in the space between the two cuttings would be crushed and pounded. To me the wonder is that the chimney stood so long. The same cause that cracked the outside would crack the inside. I have no doubt that if the shaft had been examined internally, it would have been found to be bulged inside correspondingly with the outside.

By Colonel Seddon.—When the chimney was brought over, it must have pounded and compressed everything before it, until it found a sufficient bearing area without further compression. Considering that it was a live and not a dead load, that pressure must have been more than double what it was ordinarily. The foundation yielding was, in his opinion, the primary cause of the chimney having to be straightened. An old coal-pit would not commend itself to his mind as a suitable site upon which to erect a chimney intended to be 100 yards high and 4,000 tons in weight, upon an area of 30 ft. base, although shafts were sunk and filled up with concrete.

The inquiry was concluded on Wednesday last, when Mr. Waugh, in continuation of his evidence, said that the two ½-in. cuts made in the chimney to straighten it would only have had the effect of bringing it back 15 in. at the height of seventy yards. The fact that the chimney was brought back 3 ft. was due to the crushing of the masonry at the point where the structure was cut.

Mr. Andrews, the architect who was called in to inspect and report on the state of the chimney before it fell, said he had not completed his examination when the catastrophe occurred. He was waiting to see what would be the result from the external examination before deciding to make an internal examination.

The Coroner having summed up the evidence, the jury, after deliberating for two hours, returned the following

Verdict:—"We find that the owners of the property at Newland Mills did all, that unpractical men could reasonably be expected to do under the circumstances; therefore we do not attach any blame to them, or find them guilty

of negligence; and we give our verdict—'Accidental death.' We are of opinion that the foundation was good and the fall of the chimney was partly due to cutting, aided by the strong wind on the morning of the accident, and regret the works were not stopped during the repairs."

ANCIENT WATER COMMUNICATIONS.

IN the recent explorations at Olympia, the German *savans* have given special attention to the detailed measurements of the water-communications which have been discovered. Investigations of a similar character have also been carried on in Italy, where an interesting discovery has been made at Altri (near Rome) of an old Roman aqueduct. An inscription in the town itself had indicated the existence of this aqueduct, but from its position there was evidently a connexion with it by means of pipes, and it was to the further researches made in consequence of this supposition that special interest attached. The subject has been occupying the attention of the Prussian administration, and Dr. Hagen was entrusted with the task of prosecuting the necessary researches. He was recently successful in discovering, at Monte Paielli (in the direction supposed by him to be the right one), a lead pipe communication of about 4 in. in diameter. This would have been a portion of the communication through which the water (2,000 years ago) was brought down 100 yards to the Cosa Valley, and then was brought up a corresponding distance to Alatri.

THE VOTE FOR FINE ARTS IN FRANCE.

DURING the past year the orders given and the works purchased for the French nation by the Department of Fine Arts involved an outlay of 320,000 francs, or 12,800*l.* sterling. Of this sum, 52,800 francs (2,112*l.*) was for original paintings, 15,500 francs (620*l.*) for copies of Old Masters, and 192,000 francs (7,680*l.*) for sculpture. Among the most important paintings purchased were the portrait of Lakanal, by Fritel (2,900 francs); the Battle of Bapaume, by Armand Dumaresq (12,000 francs); Herculaneum, by Hector Leroux (6,000 francs); the Fêtes at the Centenary of the Independence of the United States, consisting of ten water-colours, by Régamey (75,000 francs); and Orpheus killed by Bacchanals, by Bin (3,000 francs). The works of sculpture included the statue of Mariette Bey, by Jacquemart, for the town of Boulogne-sur-Mer (18,000 francs); the statue of Rameau, by Allesseur, and that of Gluck, by Cavelier, both for the Grand Opéra, and each costing 7,200 francs; the bronze statue of Camille Desmoulins, by Doublemard (8,500 francs); monument to Alexander Dumas, a statue and group, by Gustave Doré (12,500 francs); monument of Rouget de l'Isle, for Choisy-le-Roi (9,000 francs); monument of Denfert-Rochereau, for Belfort, a group by Mericé (5,000 francs); a bust of Pétion, for the Salle du Jeu de Paume at Versailles, by Dupuis (3,000 francs); Judith and Holofernes, by Lanson (15,000 francs); and the Childhood of Bacchus, by Doublemard (8,500 francs).

THE STONES OF COLOGNE CATHEDRAL.

ACCORDING to Prof. von Lasaulx, who has written an account of the different kinds of rock employed in the masonry of Cologne Cathedral, the quantity of stone used in building the two great western towers between the years 1863 and 1881 alone was not less than 2,110,000 cwt., or 105,500 tons. The stone originally employed in the structure was a trachyte, coming from the Drachenfels quarries; but as this had proved very subject to decay under atmospheric influences, it was decided to obtain other materials on the resumption of the work of erection. In fact, various kinds of stone were used in the completion of the edifice, such as the Andesite of Wolkenburg, Stenzelberg, and Bockum rock, Unkel basalt, and Niedermendig basalt lava. Towards the conclusion, the well-known stone of Heilbronn, the excellent Udelfang rock, and the beautiful stone from the quarries of the Weser Gebirg and the Teutoburger Forest, were chiefly employed. The figures and baldachinos on the outside of the towers are almost invariably of the warmish yellowish Oberkirchen sandstone; while the ornaments and smaller sculptures consist of the easily-worked Savonnières limestone. Thus almost all parts of Germany have contributed their quota of building material to the immense pile.

A NEW FEATURE IN HOUSE BUILDING.

WHAT may be regarded as an architectural curiosity, namely, a private mansion constructed of iron, a Mr. Huston, of Parkesburg, Pa., America, contemplates building. The floor of the hall, vestibule, and library will be laid with polished cast-iron tiles, and by using different qualities of iron it is considered that a very pleasing effect will be produced. The other floors of the house will be of stout iron plates, bolted together firmly to the iron joists. All through the house the outside walls and inside partitions will be made of two courses of iron plates, bolted together so as to be air-tight. These hollow iron walls and partitions are to be used instead of chimneys and for conveying heat to different parts of the house, and also for ventilation. It is believed that the heat passing inside the walls will be sufficient to keep the house comfortable in the coldest weather. All the doors and window-sashes will be of iron. The house outside will be painted so as to give the appearance of wood. The roof will be of strong boiler-plates. An effort will be made to make the house an architectural and scientific curiosity, and to this end most of the furniture will also be made of iron. It is admitted that the cost of the house may be twice or three times as much as that of an ordinary one, but it is urged in its favour that it will last for centuries (if properly attended to), and that no fire-insurance will be necessary.

ROYAL BERKS HOSPITAL, READING.

THE new chapel at the Royal Berkshire Hospital, Reading, an interior view of which appeared in vol. xlii. of the *Builder*, p. 14 (Jan. 7, 1882), has been opened by the Bishop of Oxford.

The building is of a Classic character, though somewhat freely treated. The walls are built of Bath stone inside and out. The roof is of polished pitch-pine, with arcaded ribs resting upon panelled wood pillars. The walls have wooden dados of polished pitch-pine and walnut, and the stonework above is relieved by panels of arabesque carving, exceedingly well executed by the late W. Finley. The seven windows are filled with stained glass: that in the chancel represents the Crucifixion, and the others portray subjects of healing, three being taken from the Old and three from the New Testament. The artists are Messrs. Gibbs & Howard, of Charlotte-street, Fitzroy-square. The seats are of pitch-pine and oak, and the pulpit and prayer-desk of oak and walnut, tastefully carved. The whole of the details have been very carefully carried out, and the effect of the building, although small, is very good. The chapel will accommodate about 100, and has cost about 2,000*l.* It forms part of a considerable addition which has recently been made to the hospital.

The new library is nearly completed, and we may give some particulars of that portion of the work when it has been opened.

The builder employed upon the chapel is Mr. A. Sheppard, of Reading; and the architects are Messrs. Morris & Stallwood, of the same town.

AFFECTATION IN ART.

SIR,—Cordially as I agree, in the main, with Mr. Calderon's discourse against "Affectation in Art" [p. 92, *ante*], yet it becomes more and more evident to my mind that in order to discourse consistently and correctly upon art, it is not alone sufficient that men be artists, but that they should also have made the theory of art, or æsthetics, a special study. The main portion of Mr. Calderon's discourse is most ably and wisely directed against affectation in art, and all proceeds well and consistently till he emphatically exhorts the students before him to be "original"! Now, sir, I must here venture to diverge and differ from the eminent artist; for this, if accepted as a main principle of action, would be diametrically opposed to what he had previously inculcated. This striving to be "original" is the very source of eccentricity and affectation in art. All the greatest art work is freest from individual bias or peculiarity; it is most like that which we should conceive would proceed from the Divine Hand,—right in every respect,—the standard work, at which all the best workmen would aim. It is only by aiming at this freedom from every taint of individuality, of originality, that affectation in art can possibly be avoided. All art would be at one if it were not for some individual peculiarity in the constitution of an artist's nature. It is at this at-one-ment, or rightness, divested of all peculiarity, and not at "originality," that students should be exhorted to aim, if it really be desired that they should avoid "affectation in art." Individuality of every kind is an aberration, or differentiation from the perfect or central form of any species of art. To be original, therefore, is to differ in some way or other from the typal condition of art; or, in other words, is to be peculiar or affected, unless, indeed, the artist's originality consist in being right amidst the general pursuit of wrong. Aristotle puts the matter thus,—"Art commences when, from a great number of experiences, one general conception is formed; and again, "Experience is the knowledge of individual things; art is that of universals." In respect to thought this universal is that common-sense which underlies every aberration of opinion on any special subject, and which is only another title for that "sanity" which Mr. Calderon so justly says "brings men nearer to the divine." It has, however, most unfortunately come to be believed that in order to be divine in art, an artist's works ought to exhibit the dominance of any sense but that of common sense.

If it be argued that in this sublunary and imperfect state we are scarcely prepared for that universal art we have already referred to, it will, nevertheless, be perceived that it behoves artists to moderate their individuality or originality, and if unable entirely to divest themselves of it, at least to mitigate and reduce it to a minimum. Humanity in its tastes is, doubtless, a most complex subject of study, for this unity of style, this universal style, free from all affectations, or peculiarities, would become monotonous by constant repetition; and, from the monotonous, human nature is apt to fly to change. It is in this tendency to change that the original, the affected, has its *raison d'être*; it is a reaction or foil in its novelty; it is for a time a delusion and a snare, but in the long run it leads men to prefer more proportioned, more symmetrical, more universal, work.

No! the exhortation to the student, for the future, will not be to be original, but to be right! For to be able to say that a work of art were, in every respect, right, would be equivalent to pronouncing it to be perfect of its kind. To be right is the great moral principle in the conduct of art, as it is in the conduct of life. The only originality that is commendable is that which discovers the right way when others have been invariably and affectedly wrong, or which lights upon some new vein of right-thinking or upon new and great subjects for illustration. But the mode and form of art is most perfect when it is freest from all bias of originality. Grecian art, of all art, will, perhaps, best illustrate my meaning, for it is freest from individual bias, and at its best most appears as if it had all been executed by one and the same perfected hand.

W. CAVE THOMAS.

THE EXCAVATIONS AT THE PANTHEON AT ROME.

HERR ADLER recently addressed the Berlin Architects' Society on the question of the connexion between the Pantheon and the Thermæ of Agrippa. He maintained that the results of the excavations made on the spot in question indicate that the latter was an independent building, and that it had been constructed in imitation of similar edifices in Alexandria and other places, instead of being a model of original Roman architecture.

America.—A new altar and reredos have just been erected in the Church of the Sacred Heart, East Cambridge, Boston, U.S.A. It has been executed from the designs of Messrs. Pugin & Pugin, of Westminster, by Mr. R. L. Boulton, of Cheltenham. It was made at Cheltenham, sent out to America, and erected in the church by Mr. Boulton's men. An east window for the same church was made by Messrs. Hardman, of Birmingham, and sent out at the same time. The total cost of these works was 2,000*l.*

LIVERPOOL ENGINEERING SOCIETY.

The first meeting of the session was held on Wednesday, the 17th ult., at the Royal Institution, Colquitt-street, Mr. H. Bramall, M.I.C.E., President, in the chair, when a paper, entitled "Engineering Notes from the United States and Canada," was read by Mr. John J. Potts, Assoc.-M.Inst.C.E. The author having recently made a tour of between six and seven thousand miles on the American continent, during which he visited the principal cities lying between the eastern seaboard and the Missouri river, and between Manitoba on the north and Tennessee on the south, described the various sights and works of engineering interest on the route, which included railways, bridges and bridge works, ironworks, waterworks, elevators or grain-warehouses, steamboats, &c., and concluded that a visit to the United States, where there is much to be learned, while tending to soften insular prejudices, strengthens the bond of friendship between the two countries; indeed, a holiday cannot be better spent than in that country, where new health is to be gained from entire change of scenery and living.

COMPETITIONS.

Knightstone Island (*Weston-super-Mare*).—Nine sets of designs have been submitted in the competition for laying out and utilising the island of Knightstone. Mr. W. Bruce Gingell, architect, of Bristol, was appointed by the proprietors of the island as their professional referee. After a public exhibition of the whole of the drawings, at the Assembly-rooms, Weston-super-Mare, the referee has awarded the premium of 50 guineas to the designs under the motto, "Justitia," of which Mr. Herbert J. Jones, architect, of Wellington-chambers, Bridge-street, Bristol, was found to be the author. The premiated designs provide for laying out the island as a promenade, and for the erection of Turkish baths, a marine hotel, library, reading and billiard rooms, and two boarding-houses. The styles of architecture adopted are, Oriental for the baths, and a free treatment of Italian for the other buildings. The estimated cost is 9,400*l.*

NEW BOARD SCHOOL, SHEFFIELD.

A group of schools differing both in design and construction from any of the twenty-two other sets of schools erected by the Sheffield School Board were opened recently. It is the first school of the series provided with a central hall, at the end of which is the master's platform, and surrounding which, and divided from the hall by large glazed partitions, are twelve class-rooms of various sizes. The floor of the hall is laid with wooden blocks on concrete for the prevention of noise, thus securing quietness in the working of the school. The upper portions of the schools and class-rooms are plastered and finished in various tints. The lower portions of the hall and corridors consist of white and buff glazed bricks, and in the class-rooms of stained and varnished pitch pine, boarding and capping. The usual playgrounds are provided, and there are also drinking-fountains in them and inside the schools. The heating of the entire schools is by steam, on Leeds's patent system, fixed by Messrs. Longden & Co., Sheffield. The ventilation, which is by fresh-air inlet-tubes with regulating valves, and by Boyle's patent exhaust ventilators, is found efficient. The main block of the buildings is in two stories, and the roof is surmounted by a large well-proportioned *flèche* as a bell and ventilating turret. The walls are of Walkely (local) wall-stone, with Grenoside ashlar dressing, the roof being covered with black Westmoreland slates. The design is a free treatment of the Tudor style successfully adapted to modern requirements, from plans prepared by Mr. C. J. Innocent, Sheffield, the contractors for the whole works being Messrs. Chadwick & Co., of Rotherham. The contract amount is 8,800*l.*, and the total accommodation is for 1,024 scholars.

The Sportsman's Exhibition, at the Agricultural Hall, Islington, will be open till the 10th. The private view will take place this, Friday, February 2nd. The Exhibition addresses itself to a large number of persons, and offers many points of interest.

BILLS IN PARLIAMENT.

A large market is proposed, as before noted, to be formed in Brompton-road, opposite Pelham-crescent, for the sale of provisions. The market is intended to be called South Kensington Market. Another market is proposed to be built on the south side of Harrow-road, between North Wharf-road and Church-place. This market will occupy an area of about 12,000 superficial feet, and is intended to be called Paddington Market.

The Mid-London Market Company has scheduled a portion of the Victoria Embankment Garden, near the Charing Cross Railway Station, York Gate, and the house in Buckingham-street, formerly in the occupation of Peter the Great, and now partly occupied by the Charity Organisation Society.

The Danish Church, High-street, Poplar, which contains some interesting work by Caius Cibber, is scheduled by the Poplar and Canning Town Railway. The church appears to belong at present to the Midland Railway Company.

The Metropolitan and Metropolitan District Railway Companies propose to take property on the east side of Seething-lane, including the whole of the south side of Catherine-court, which consists of some picturesque Queen Anne houses. There is a remarkable piece of wrought ironwork across the entrance to the court.

The Bexley Heath Railway, which is proposed to be formed from Lee to Crayford, has scheduled a portion of Eltham Green.

SURVEYORSHIP.

Mr. John Hayward, Architect, of Exeter, having resigned the post of surveyor to the Devon and Exeter Hospital, a position he has held for over thirty years, an election for a new surveyor took place last week. The applicants were:—Messrs. J. Crocker, A.R.I.B.A.; R. Medley Fulford, F.R.I.B.A.; G. Packham, C. Pinn, J. M. Pinn, and C. Cole, all architects, of Exeter; and Mr. W. R. Bryden, architect, of Bideford. The running lay between Messrs. J. M. Pinn, J. Crocker, and R. Medley Fulford. Ultimately the latter gentleman was elected by a majority of two.

VALUABLE WEST-END PROPERTIES IN THE AUCTION MART.

THE MEMBERS' MANSIONS.—CRAWLEY'S HOTEL.

On Tuesday last Messrs. Chinnock, Galsworthy, & Chinnock submitted to competition at the Auction Mart two important freehold properties. The first offered, which was by order of the first mortgagee, was that in Victoria-street, Westminster, known as the Members' Mansions, erected within the last three or four years, at a large outlay, and specially intended as residential chambers for members of Parliament. In the descriptive printed particulars, the property was stated to have its main frontage on the north side of Victoria-street, with a return frontage to Chapel-street, within a very short distance of the Houses of Parliament and the Government Offices, and comprising five blocks of chambers and offices. The buildings alone, exclusive of the freehold site, were said to have cost upwards of 100,000*l.* The estimated rental value, when fully let, was stated to be 6,900*l.* per annum, the present actual rental being about 3,500*l.* per annum, or half the full rental value. In addition to the buildings already named, covering a ground area of 9,712 ft., the property offered also included an adjoining corner plot of freehold building land, containing an area of about 2,488 ft., described as being suitable for the erection of banking premises, offices, stores, or chambers. The biddings commenced with an offer of 50,000*l.*, and by advances of 1,000*l.* at each bid, 60,000*l.* was reached; when, there being no further advance, the property was bought in at 65,000*l.*

The auctioneer next offered the freehold property known as Crawley's York Hotel, comprising a block of four residences in Albemarle-street, Piccadilly, occupying a site of about 6,800 superficial feet. The premises were described as adjoining the Royal Arcade, presenting a handsome elevation, and having a frontage to Albemarle-street of 101 ft., with a return frontage to Stafford-street of 43 ft., and admirably adapted for a first-class club or hotel, for the latter of which the tenants were ready to take a lease at a fair rent. Mr. Chinnock, in estimating the value of the property, said that from his personal knowledge of the value of land in that part of the west end of London, the land alone upon which the hotel stood was worth 6*l.* per foot, which represented about 40,000*l.*, and he estimated the annual value of the four houses forming the hotel to be 400*l.* each. The first offer was 20,000*l.*, and 34,500*l.* being the highest bid, the property was withdrawn at 38,000*l.*

VALUE OF PROPERTY IN EASTCHEAP.

A Corporation leasehold property, which commanded a large sum, was last week offered for sale at the Auction Mart by Mr. V. Buckland. The property comprised the business premises, No. 33, Eastcheap. The auctioneer, in submitting the property, remarked that although leasehold it was almost freehold, being held from the Corporation upon a lease renewable every fourteen years, for ever. He observed that the premises were situated in the best part of Eastcheap, and had recently been rebuilt. They had a frontage of 18 ft. 10 in. to that important City thoroughfare, and included, in addition to the building in front, a large warehouse in the rear, altogether covering an area of 2,100 ft. There was a numerous attendance of capitalists present, and a close and spirited competition for the property. The first offer made was 10,000*l.*, followed by an immediate bid of 12,000*l.*, and by advances of 1,000*l.* the property was quickly brought up to 22,000*l.*, and was ultimately sold for 22,850*l.*

GARLANDS ASYLUM, CARLISLE.

The contract for building the female junction block, at Garlands Asylum, has recently been let to Messrs. Beaty Brothers, builders and contractors, Carlisle, and the work was commenced on the 1st of February. The whole will be built, on as usual, with red Newbiggin stone, relieved with white quoins and strings. This block will complete the enlargement, which has occupied over four years, and has all been entrusted to the same contractors. The total cost of the enlargement from 400 to 600 patients will cost over 25,000*l.*, and has been carried out in portions so as to keep all things in working order. The total length of the main front is about 1,000 ft. The heating and steam power for the works has been carried out by Messrs. Haydon & Sons, of Manchester, under the management of Mr. Blake. The plans, from the beginning of the asylum, some twenty-five years ago, have all been prepared by Mr. Cory, architect and county surveyor, Carlisle. Mr. Plant has been clerk of works for over five years.

NOTTINGHAM MUNICIPAL OFFICES COMPETITION.

Sir,—The instructions for the above-named are expressed with admirable clearness; but the terms of the contest include some doubtful stipulations, on which it appears to me that the profession should express its opinion. In default of an abler hand, I ask your permission to state what these points are.

The first is, that the Corporation "will provide the quantities." In my opinion, the architect ought to have the option of doing this work himself (as is the practice in the Northern counties), or of appointing some one to do it. The translation of the design into measurements is a work which may very easily be done in such a way that the Corporation will find themselves bound to reject the tenders; and I submit that if the chosen competitor has no control over this part of the business, he is at the mercy of he knows not what or whom, and his work may be thrown on his hands without any fault of his.

Then, the first premium (300*l.*) is to "merge in the commission if," &c., &c. How well this shameful, paltry phrase is known to persons who draw up these documents! By implication, the right is hereby reserved to discharge the "best man," after getting his design out of him, by paying him 300*l.* for designing a building which will cost, it is said, 100,000*l.* If the Corporation engage a qualified man to do this work, they must pay him from 1,000 to 1,200 guineas. What inducement then remains to the "competent and experienced architects," whom the Corporation expressedly invite to

join in the competition, when the prospect of further emolument is uncertain?

Further, all "premiated designs are to become, and to remain, the property of the Corporation,"—there being a second premium of 200*l.*, and a third of 100*l.* The Corporation evidently intend to get much for their money; indeed, a great deal more than it ought to buy. Such is the wretched, mean spirit in which public bodies in England enter upon a building project. In other countries,—countries far poorer,—they know better how to build, and how to pay their advisers.

But the most striking novelty is the provision that "the whole of the contract drawings and specifications, prepared by the elected architect for the buildings, are to be given into the possession, and to become the property, of the Corporation!" It is difficult to see what object is to be served by this stipulation, unless it be to fill up a nook in the new buildings. Will this arrangement include the detail drawings, or not? Why do not the Corporation demand to have the architect's letters, his tee-square, his desks, chairs, tables, &c., as well?

Finally, no travelling expenses will be paid, so that non-residents will be taxed to that extent in favour of the omniscient and gifted "local man," who nearly always comes in first.—Accept sentiments of my esteem,

A COUNTRY ARCHITECT.

BRISTOL MASTER-BUILDERS' ASSOCIATION.

ANNUAL MEETING AND DINNER.

THE annual meeting and dinner of the Bristol Master Builders' Association took place on Wednesday evening at the Grand Hotel, Bristol. Until the election of a president for the coming year, which took place towards the end of the evening, the chair was occupied by the retiring president (Mr. W. H. Cowlin). There was a large attendance of members of the Association and friends, and a very pleasant evening was spent. After the loyal toasts and that of the Army and Navy had been drunk, the business portion of the meeting was transacted, it being commenced by the chairman reading the annual report, which contained the following passage:—

"The principal feature of the year was, perhaps, the action taken by the Association with a view to modify the rules that existed between employers and employed, resulting, as you are aware, in the abandonment of all such rules. Your committee would wish to state that such an important step was not taken until after the workmen had refused to try the experiment for a twelvemonth, and not then until the question had been thoroughly debated, numerous meetings having been held, deputations received, and correspondence taken place on the subject. Your committee are of opinion that the ability on the part of employers to make such rules and arrangements best suited to the circumstances of particular cases cannot but be a step in the right direction; while the payment of workmen according to their value and the state of the labour market is a fair condition for the employer, and, at the same time, ought to induce operatives to improve themselves, and so be in a position to obtain the highest rates."

The report was unanimously adopted. The chairman, who said he had been president of the Association for five years, next nominated, as the new president, Mr. A. Krauss, who was unanimously elected.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

213. E. A. Showell and C. Turner, Birmingham. Sash and casement fastenings. Jan. 13, 1883.

220. G. Davis, Aberystwith; W. Jones, Llannon; and R. Girdwood, Edinburgh. Chimney cowls and ventilators. Jan. 15, 1883.

234. J. Hudson, Bolton. Apparatus for holding and releasing roller blinds. Jan. 15, 1883.

238. H. H. Lake, London. Water-closets, &c. (Com. by J. Bennor, Philadelphia, U.S.A.) Jan. 15, 1883.

240. R. Stone, London. Manufacture of artificial stone, &c. Jan. 15, 1883.

244. W. Wright, Droylsden. Latches for doors, &c. Jan. 16, 1883.

254. A. Frank, Charlottenburg, Germany. Manufacture of porous silicious material for building purposes. Jan. 16, 1883.

280. J. H. Starling, Erith, and E. A. May, Belvedere. Manufacture of bricks, tiles, cement, &c. Jan. 17, 1883.

290. J. D. Sprague, London. Fastenings for blinds and sash cords, &c. Jan. 18, 1883.

309. L. Hart, Hull. Construction of factory chimney shafts. Jan. 18, 1883.

330. A. Dowson, London. Groynes for protecting foreshores. Jan. 20, 1883.

336. J. W. Blakey, Leeds. Preventing the freezing of water in water-closets, &c. Jan. 20, 1883.

341. T. Trier, London. Dressing stone, &c. Jan. 20, 1883.

352. J. M. Hart, London. Fire-resisting doors, &c. Jan. 22, 1883.

387. G. F. Harrington, Ryde. Ventilating sewers. Jan. 24, 1883.

389. E. Verity, J. M. Verity, and B. Banks, Leeds. Window stays or holders. Jan. 24, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 16, 1883.

4,353. H. Pearce, London. Apparatus for opening, closing, and securing fanlights, casements, sashes, &c. Sept. 13, 1882.

4,995. T. Kay, Stockport. Apparatus for warming and heating rooms, &c. Oct. 20, 1882.

Jan. 19, 1883.

4,423. W. R. Lake, London. Composition for the preservation of wood, stone, &c. (Com. by A. Buzolich and T. K. Smith, Melbourne, Victoria). Sept. 16, 1882.

4,430. J. Imray, London. Waterclosets, &c. (Com. by R. H. Lecky and J. Hay, Pittsburg, U.S.A.). Sept. 18, 1882.

4,811. A. J. Boult, London. Door stops or checks. (Com. by G. R. Elliott, Boston, and J. M. Winslow and T. E. Clary, Norwood, U.S.A.). Oct. 10, 1882.

Jan. 23, 1883.

4,449. W. G. Stevens, Bristol. Combined range and register grates. Sept. 19, 1882.

4,462. J. McPhail, London. Chimney-tops, &c. Sept. 19, 1882.

4,466. E. Edwards, London. Apparatus for closing, &c., window and other frames. (Com. by A. Descaves and D. Hallet, Paris.) Sept. 19, 1882.

5,778. J. D. Sprague, London. Window sash-fastenings. Dec. 5, 1882.

Jan. 26, 1883.

4,514. J. W. Cook, London. Temporary partitions for rooms, &c. Sept. 22, 1882.

4,592. H. Blair, Glasgow. Ventilating appliances for soil-pipes, &c. Sept. 27, 1882.

5,685. F. Smith, London. Walls, arches, &c. Nov. 29, 1882.

5,848. J. W. Butler, Blackheath. Indurating artificial stone. Dec. 7, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending January 20, 1883.

2,656. J. Harris, London. Means for holding up windows. June 6, 1882. Price 6d.

Rollers are placed in the sides of the sliding window, which are forced against the frame by springs.

2,772. R. W. Hutchings, London. Slabs of plaster or composition for ceilings. June 13, 1882. Price 2d.

This is an improvement on Patent No. 1,665 of 1875, in making the slabs of plaster, &c., upon coarse canvas or wire netting in long lengths. (*Pro. Pro.*)

2,844. J. H. Browne, Cleobury Mortimer. Manufacture of panels, boards, &c. June 16, 1882. Price 6d.

These are made of leather cuttings, curriers' shavings, &c., which are reduced to pulp, and then pressed into the form required.

2,718. T. Ogden, Burnley. Stoves, &c. June 9, 1882. Price 6d.

The back of the stove presents to the fire a concave face in which are formed flutings or air-passages to consume the smoke.

2,815. A. B. Brown, Edinburgh. Apparatus for ventilating, cooling, and distributing air. June 15, 1882. Price 8d.

The ventilating-fan is driven by three single-acting cylinders, and connected with the shafts are two other sets of cylinders, one of which draws in the air and compresses it when it is passed to the other set, where, by expansion, it is cooled. Thence it passes to the fan.

2,859. H. C. Tucker, Peterborough. Sash weight attachments for sash-windows. June 17, 1882. Price 2d.

A catch is secured on the sash-frame which, when turned, passes through a mortise to lock the suspending slip and prevent the weight from falling. (*Pro. Pro.*)

2,882. W. S. Laycock, Sheffield. Self-acting window-blind apparatus. June 19, 1882. Price 2d.

The blind is rolled round a spring roller, and a rocking-bar engages ratchet-teeth on the roller to prevent its being wound up, but when the weight of the blind is lifted, the rocking-bar is also disengaged and the roller revolves. (*Pro. Pro.*)

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

THE SOUTH KENSINGTON MARKETS.

THE promoters of the South Kensington Markets scheme,—a scheme, as already mentioned by us, which provides for the erection of a market and other buildings on an area of about 7 acres of land, in the Fulham-road, opposite the new South-Western terminus,—have instructed Messrs. Perry & Reed, of the Adelphi, to prepare the necessary drawings for the new buildings, and Messrs. Hills-Owen & Elwes, of Victoria-street, to act as consulting engineers. The promoters of the Paddington Market scheme have also appointed the same gentlemen to act as their professional advisers.

ACTION AGAINST MESSRS. LUCAS & AIRD.

A CLAIM FOR WAITING.

A CLAIM of a novel character was last week made in the Guildford County Court against Messrs. Lucas & Aird, the well-known builders and contractors. Messrs. Lucas & Aird are the contractors for the Kingston and Guildford Railway, now in course of construction, and in that capacity had employed a navvy named Smart. Some short time since Smart was dismissed from the defendants' service, and he now claimed 6s. 8d., the loss which he alleged he had sustained by having had to wait two days for his wages. He said he was suddenly discharged on the Wednesday, and on applying for his wages, he was told that he must wait for them until Saturday.

Mr. Freeman, cashier for the defendants, appeared on their behalf to prove custom.

The Judge, Mr. Lushington, told the plaintiff that he was sorry he could not assist him, and observed that if every person who had to wait for money could make a claim for the waiting, a good many of them would become wealthy.

Judgment for the defendants.

CASE UNDER EMPLOYERS' LIABILITY ACT.

BEVAN *v.* TROW.

THIS case (heard in the Walsall County Court on the 25th of January, before Mr. W. D. Griffith, judge, and a jury) was one of some importance. It had been sent down from the Court of Queen's Bench to be re-heard, Mr. Justice Stephen desiring his Honour to state definitely and distinctly what was the relation between the defendants and a man named Williams, who was alleged on the one hand to have been a sub-contractor and on the other to have been a fellow-servant of the plaintiff's.

The plaintiff's case, as originally set before the Court, was that as he was working under Williams at the Presbyterian Church, Walsall, in November, 1881, a chain broke which was being used to raise an iron column and he was thrown off a scaffold and his leg was broken. He declared that nothing was ever said to him when he was sent to work under Williams to lead him to suppose that he was being transferred from the service of Messrs. Trow. The chain, it appeared, had not been supplied by Messrs. Trow or their general foreman, but had been borrowed by Williams from a man named Powell, the foreman of the stonemasons; and this was one circumstance that was relied upon as releasing the defendants from responsibility,—the other, and principal one, being that Williams was really a sub-contractor and not a fellow-workman of the plaintiff's, he having undertaken to put up the roof of the church and find the labour for 65*l.*, the defendants finding materials and appliances. The verdict on that occasion was for 60*l.*, the amount to which it was agreed that he was entitled, if entitled to anything at all. An appeal was made, and Mr. Justice Stephen having desired the information named above, a new trial was ordered.

The evidence adduced on this occasion was substantially the same as that previously given, with the addition that the plaintiff's injury had taken a bad turn and that he was not likely to be able to do anything whatever for another six months.

His Honour summed up briefly, and left the following four questions with them, viz.:—(1) Was Bevan the servant of the defendants at the time of

the accident? (2) Was Williams, besides being a contractor, in the service of the defendants? (3) Did the accident occur by reason of any defect in the condition of the plant connected with or used in the business of the employer? and (4) Did the accident occur by reason of the negligence of any person in the service of the employer who had the superintendence of the work, and whose orders the plaintiff was bound to obey?

The jury answered all four questions in the affirmative, and found for the plaintiff for 70*l*.

DAMP AND POROUS WALLS.

Sir,—Many houses have recently been erected in the neighbourhood of Bristol with badly burned or half-baked bricks, and mortar little better than dirt. Is there any cheap method of rendering the walls impervious to wet, so that the houses can be safely inhabited, and should the application be on the outside only? The matter is a serious one to many poor and innocent owners. House Agent.

STONE-CUTTING MACHINES.

Sir,—In your notice of Mr. Schmidt's stone-cutting machine [p. 59, *ante*] you were perfectly justified in not vouching for the novelty of the process.

To divide blocks of stone by some kind of percussive slotting tool has been tried again and again in this country, in France, and in America.

It is evident, from the description, that Mr. Schmidt's machine has only been tried on a small scale, and that conclusions have been drawn from experiments only, and not from every-day working on a commercial scale.

To divide blocks of granite, or of any stone composed for the most part of silex, is quite impracticable, on account of the great wear of the tool, the effect of the percussion and the attrition against the sides of the slot, as well as the wear and tear of the machine.

As to dividing marble and softer stones in this way, the process would not bear a moment's comparison with the ordinary saw-frame, in which many blades can be fixed at one time, performing the work with the least possible waste of stone.

Machines similar to that described by Mr. Schmidt are being used extensively in Belgium and the United States for cutting blocks out of the quarries. A row of long chisels is mounted on a frame capable of travelling automatically on girders laid on the bed of the quarry. The chisels are usually attached directly to the piston of the cylinder, which is driven either by steam or compressed air. The chisels have a reciprocating vertical movement, and cut a groove often 6 ft. deep and 60 ft. long. Cross slots are cut where no natural joints occur, and the blocks are lifted out by wedges in the bed-joints. The writer has seen as many as twenty of these machines at work at one time in the immense marble quarries at Sutherland Falls, Vermont, U.S.

These machines effect an enormous saving in material, often as much as 75 per cent., where the natural formation of the rock is favourable to their application. They are also used in quarries of grit-stone, but only of very moderate hardness.

Slotting granite by this means is quite out of the question. Nor is it needed.

Granite, and other stones approaching granite in hardness, can be readily split in large masses from the face of a well-worked quarry, and these masses are afterwards, by a similar splitting process, divided into blocks of the required dimensions.

The problem of surfacing hard stone has been completely solved by us. One of our machines has been in constant use in Paris for over three years, dressing a very hard granite, frequently doing as much as 45 superficial feet per hour, taking 1 in. deep cuts, and producing a perfect surface.

Many very large contracts have been executed here and abroad with these machines on stone of every degree of hardness, showing a saving of 60 per cent. (and more) over hand labour. Needless to say that no percussive action has accomplished this result; it has been due to a true and perfect application of our system of rolling sharp-edged circular cutters. Brunton & Trier.

SUB-CONTRACTING IN THE BUILDING TRADE.

Sir,—The question of piecework in the building trade having frequently been argued by the artisans of the building class, it is now an undivided opinion that the system is productive of unmitigated evils, not the least of them being the insecurity of workmen's wages employed under this system.

It is an anomalous condition for the law to permit a builder to intrust the wages of a number of men, without bond or surety, to the hands of one man who possesses no social standing. If builders benefit themselves by sub-letting their work, they should, by common fairness in business, be held responsible for the character of the sub-contractors.

One who has Twice lost his Wages.

THE WATER COMPANIES.

Sir,—The periodical reports made by Messrs. Crookes, Odling, and Tidy, on the quality of the water supplied to Londoners, would be more duly appreciated if you could inform us by whom these great chemical celebrities are paid. I am told their remuneration is derived, if not directly, indirectly from some of the London Water Companies through the Metropolitan Association. Will you kindly say if this is so? If this is true, it will detract considerably from the impartiality of these reports.

T. Tudor.

*** We believe it to be correct that the chemists in question are in reality paid by the Companies.

PAYMENT FOR MEASURING.

Sir,—When a contract is entered into between a builder and a proprietor to erect any building, with a clause inserted in the agreement that the proprietor shall make *any alterations at any time or times he pleases*, and that the proprietor's architect shall measure the extra works that may be executed, and also the omissions not executed, but where it is not stated in the agreement who shall pay for the measuring,—the proprietor or the builder,—what is the usual or universal custom throughout the United Kingdom in such cases? Are there any parts of the United Kingdom where the custom, whatever it may be, is varied? and if so, What is the variation? A. Z.

PROVINCIAL NEWS.

Wolverhampton.—At a special meeting of the Sewerage Committee of the Wolverhampton Town Council, it was, after some discussion, resolved,—"That the Sewerage Committee be and are hereby empowered to engage a competent engineer to be selected by them to advise upon the whole question of the disposal of the sewage of the borough."

Stafford.—Alderman Cox, Chairman of the Gas Committee of the Stafford Town Council, has just turned the first sod of the new gas-works extension. The works comprise the construction, at a cost of nearly 3,000*l*., of a large tank, which will contain an additional gasometer capable of holding some 480,000 ft. of gas. Alderman Cox expressed a hope that the works would be completed without accident and in a manner satisfactory to the Corporation and to the contractor, Mr. G. Moss, of Liverpool.

Miscellanea.

A Remarkable Clergyman.—The Rev. Wilse Browne, M.A., rector of Whitstone, near Exeter, was buried on Saturday in his own churchyard, aged 72. From 1862 Mr. Browne had served as a private in the Exeter Rifle Volunteer Corps, and continued so until the day of his death. He was a capital shot, and took many prizes at Wimbledon. He was the only clergyman in England serving in the Volunteer ranks. He was a skilled mechanic, and possessed over a ton of tools, of which he made good use. As a brewer, his beer and cider were amongst the best in Devonshire. He handled a needle and cotton with the skill of a tailor. His generosity knew no bounds. His funeral was attended by the ex-Mayor of Exeter, and a large number of Volunteers.

The late Mr. C. Lamb Kenney.—An admirable representation of "The School for Scandal" was given at the Gaiety Theatre last week, for the benefit of the widow of the late Chas. Lamb Kenney. Messrs. Henry Neville, Hermann Vezin, Arthur Stirling, Fred. Terry, Edmund Lyons, and Mrs. Arthur Stirling, were amongst those who most distinguished themselves; but the feature of the performance under the circumstance was the appearance of Miss Rosa Kenney for the first time as *Lady Teazle*, with a very successful result. The quarrel scene, Mr. Maclean being *Sir Peter*, was played with great vivacity and intelligence, and the screen scene brought tears into many eyes. Mr. C. H. Kenney was a capital *Careless*.

Society of Arts.—Among the premiums offered by the Society of Arts for the 129th session of the Society (1882-3) are the following:—Fothergill Prize.—A Society's Gold Medal, or 20*l*., for the best invention having for its object the prevention or extinction of fires in theatres or other places of public amusement. Mulready Prize.—A Society's Gold Medal "To that student in a School of Art in the United Kingdom who exhibits the best drawing from the nude figure, executed in black and red chalk, in the manner so successfully practised by Mulready."

Tenders are being sought for the construction of a new graving-dock, 600 ft. in length, in Roath Basin, Cardiff.

The Administration of the Office of Works.—A correspondence on this subject has been published in the columns of the *Morning Post*. An "Ex-Official" writes,—Having been attached to that office for some little time, I was enabled, as a looker-on, to see, perhaps, "more of the game" than was given to others. There is no doubt that the Office is simply "swathed in red tape," and the waste of time spent by a multitude of clerks over trivialities is marvellous, the generally prevailing idea amongst its officials being that all applications made to the Office are superfluous and ought to be refused. Every credit should be given to the present permanent secretary for his wish and earnest endeavour to break through this red-tape bondage, but I fear me that tradition has proved too strong for him. I think, however, that your numerous correspondents should recognise the fact that the Office of Works is by no means the chief culprit in these matters. This office is entirely under the control of the Treasury; nothing can be done without its sanction; no vote can be exceeded without the Office of Works incurring its severest censure. Treasury officialism rides rough-shod over every suggestion that emanates from the Office of Works, and that would cost money, even if that suggestion were instrumental in promoting sanitary or architectural improvements. . . . . There is something rotten in the State of Denmark, but the Treasury is the office at which to commence reforms, and not a subordinate office like the Office of Works.

Rome.—The Syndic, Duke Leopoldo Torlonia, has entertained the artists who have come to Rome for the Exhibition and the architects and engineers who are now holding their fourth congress on the Capitol, at lunch in the great *palestra* of the Baths of Caracalla. Tables, under awnings stretched along the sides of the hall, were laid for upwards of twelve hundred guests. At the end of the lunch a number of the artists who had previously withdrawn returned as a masque, representing the Emperor Caracalla, who, attended by senators and courtiers, came forward to thank the Syndic of modern Rome for the honour he had done his baths.

Peterborough Cathedral.—After a careful examination of the condition of the central tower of Peterborough Cathedral, Mr. Pearson has pronounced the whole structure to be in a shattered and unsafe state, and it has been decided to take down the failing walls to below the tops of the lantern arches, and to rebuild that structure. The walls of the transepts are to receive attention, the choir is to be thoroughly restored, and the west front strengthened. All this will be done if the necessary funds are forthcoming. The estimated cost of the works enumerated is 55,000*l*.

Messrs. F. W. Reynolds & Co., of Acorn Works, Edward-street, Blackfriars-road, London, have just paid the 100*l*. stamp duty which secures to them for another seven years the patent rights for the manufacture and sale of the "Eclipse" Mortising Machine, the special feature of which is the "toggle" or articulated elbow, which not only produces the requisite vertical motion of the chisel, but gives it increased power as it penetrates deeper into the wood being mortised.

Lifts.—Messrs. Clark, Bunnett, & Co., Lim., have received instructions to fix one of their Patent Invalid Lifts to Lambeth Workhouse. They are also fitting their Direct-acting Hydraulic Invalid Lift to the West London Hospital, Hammersmith, and also lifts to the Home Hospital, Dean-street, and Hospital for Women, Chelsea.

Society of British Artists.—Mr. Edward Freeman has resigned the post of Acting Secretary to this Society, and in the autumn will inaugurate a new series of Exhibitions to be entitled the "Nineteenth Century Art Society," at the Conduit-street galleries, known in the past season in connexion with the "Christ before Pilate" of Michel de Munkacsy.

The Great International Fisheries Exhibition.—A private view of the buildings erected in the gardens of the Royal Horticultural Society, South Kensington, for the great Fisheries Exhibition, will take place on this Friday, February 2nd. Structures of very large capacity are already erected.

Liverpool Art Club.—A memorial exhibition of the works of the late Hablot K. Browne ("Phiz") has been arranged by the Liverpool Art Club, and will be opened to the public next week.

Trees in Streets.—The Geneva correspondent of the *Times* writes:—An interesting controversy on the utility, or otherwise, of trees in streets and open spaces has been lately going on here in the columns of the local press. The controversy arose out of a discussion in the International Hygienic Congress, which was held here in August, and Dr. Piachaud, a member of the Congress, has since contended, in a letter addressed to the *Journal de Genève*, that trees in streets do more harm than good, that they impede the circulation of air, and that, as for the shade they afford, people who do not like sunshine have only to keep on the shady side of the street. Instead of planting more trees in towns, as some propose, he would rather, in the interests of hygiene, remove all existing trees. To him replies Professor Goret, of the University, who, though an eminent physicist and chemist, disclaims any special knowledge of medicine or hygiene. He treats the matter from an exclusively common-sense and scientific point of view. As for people who want shade keeping always to the shady side of a street, he points out that, as streets have generally shops and houses on either side, Dr. Piachaud's advice in this regard, however ingenious, can hardly be regarded as practical. But the functions of trees in streets are not limited to acting as screens for sun-shunning wayfarers; they temper the heat and serve as a protection against dust. The evaporation from their leaves tends to keep the surrounding air cool and moist. So far from trees impeding the circulation of air, they help to purify the air; the evaporation from their leaves determines a current from above, and the fresh air thus brought down helps to drive away the heated and dust-impregnated gases of the streets. Another useful property of foliage is that, while in hot, dry weather it moistens the surrounding atmosphere, thereby rendering it fitter to breathe, this effect, which is due to evaporation, ceases in wet weather. Trees, moreover, act as purifying agents by absorbing carbonic acid and giving out oxygen. But the action of trees on the air is far less important than their action on the soil. Their roots draw up stagnant waters and absorb the organic matters contained in the filth from which the streets of a town are never free, and which, after infiltrating the ground, are a frequent cause of fevers and infection. Trees, in fact, have the same effect on the subsoil of towns as fields have on the contents of their sewers,—they act as disinfectants. Taking these facts into consideration, Professor Goret ventures to differ from the conclusions of the Hygienic Congress, and strongly recommends the planting of trees in streets and squares.

"A Perfect Safety Lamp for Miners." Mr. Thomas Burt, M.P., has issued a circular stating that Mr. Ellis Lever, of Culceth Hall, Bowdon, has agreed to hand over to the Central Board of the Miners' National Union the sum of 500*l.*, to be paid as a premium to any person, either in or out of the United Kingdom, who shall invent a portable electric or other safety lamp to be used in mines. The lamp is to be a perfectly portable electric or other lamp, which working miners can conveniently carry from place to place in the mine, and which will not, under any circumstances whatever, cause an explosion of gas. The efficiency of the lamps put in for competition will be submitted to five gentlemen, composed as follows:—Three scientists to be named hereafter, one to be selected by Mr. Lever, one by the Council of the Royal Society, and one by the Council of the Society of Arts, one person representing the mining engineers, chosen by themselves, and one person representing the workmen, chosen by the Central Board of the Miners' National Union. The offer will remain open until the 31st day of December next.

Bourn Abbey Church. — The work of restoration of the west front of the Abbey Church has at length been completed. The builder and contractor was Mr. T. C. Halliday, of Greetham and Stamford, who has been represented at Bourn by Mr. S. F. Halliday, and the work throughout has been carried out under the care of the clerk of the works, Mr. C. Bentley, of Stamford. The task of supporting the superstructure and the careful bonding together of the new work with the old, was brought to a successful issue without any signs of fracture or settlement. The architect is Mr. J. C. Traylen, A.R.I.B.A., of Stamford and Peterborough, under whose superintendence the operations have been done.

The Calcutta International Exhibition, 1883.—An International Exhibition will be opened at Calcutta, on the 4th of December next, under the patronage of the Viceroy and Governor-General of India, and the Lieutenant-Governor of Bengal. There will be nine principal sections:—1, fine arts; 2, apparatus and application of the liberal arts; 3, furniture and objects for the use of dwellings; 4, clothing, including fabrics and objects of personal wear; 5, products of mining industry, forestry, &c.; 6, apparatus and processes used in the common arts; 7, food, fresh, preserved, or in various states of preservation; 8, artisans' workmanship; 9, children's work. Certificates of gold, silver, and bronze medals will be awarded by special juries of experts. An attempt will also be made to hold an exhibition of live stock, agricultural and horticultural products, and of a loan collection of paintings, sculpture, and works of art generally. The India Government has granted the use of the India Museum, together with the grounds and buildings adjoining,—a magnificent pile of buildings.

The Vienna Railway.—It is announced that the Minister of Commerce has, with the Emperor's sanction, granted the concession for the construction of the Vienna City Railway to the Fogerty Syndicate. The works will be carried out under State supervision, and the cost of the line is estimated at 60,000,000 florins. In a letter to the Burgomaster notifying the concession, the Minister observes that the construction of the line is rendered necessary not only for the public convenience, but on account of the present state of labour. We gave a view of the station some time ago.

American Social Science Association.—The annual meeting of the American Social Science Association will be held in Saratoga, New York, in the first week of September next. Papers from members of our own association, for reading in the Education Department, would be gladly received. The secretary of this department is Mrs. Emily Talbot, and her address is 66, Marlborough-street, Boston, U.S.A. She would be glad to hear from any members of the English Association who might be contemplating visiting New York in the month of September.

The Lowering of the Wellington Statue, Hyde Park Corner, has been slowly but safely proceeded with since we wrote last week. The upper arch which carried the pedestal having been cut away, the statue had been lowered, up to Wednesday evening last, a total distance of about 19 ft. In our article last week on the subject, on p. 123, col. 1, line 2, by a slip of the pen certain shores or struts were spoken of as raking downwards to balks secured to the tops "by" the iron girders. The sentence should have ended "secured to the tops *of* the iron girders."

TENDERS.

For additions and alterations to Lewins House, Edenbridge, for Mr. Joseph Robinson. Mr. J. M. Brydon, architect, 5, Cambridge-place. Quantities by Messrs. Franklin & Andrews:—

Foster & Dicksee, Rugby	£3,124 0 0
Bingham, Headcorn	2,959 0 0
Martin & Wells, Aldershot	2,875 0 0
Birch & Co., Farnham	2,580 0 0
Punnet, Tunbridge	2,471 0 0
Durtnell, Brasted (accepted)	2,441 0 0

For villa residence for Mr. A. McEwan Brown, Knole-road, Bournemouth. Messrs. Kemp-Welch & Pinder, architects:—

W. Walden	£1,230 0 0
A. D. Beynon	1,120 0 0
Hoare Bros. & Walden	1,085 0 0
A. H. Stroud	1,070 0 0
J. H. Drake (accepted)	975 15 6

For works at Forest Gate:—

Dunmore, Hornsey	£2,142 0 0
Adams, Hackney	1,990 0 0
Blomfield, Tottenham	1,980 0 0
Wyman, Edmonton	1,950 0 0
Hoare & Son, London	1,924 0 0
Cardus, Acton	1,875 0 0
Marshall, Stratford	1,828 0 0
Nicholson, Southend	1,811 19 1
Pound, Bow-road	1,809 0 0
Bell, Wood Green	1,799 0 0
Wood, Chelmsford	1,785 0 0
Brighouse, Woolwich	1,734 0 0
Oliver, Brighton	1,720 0 0
Carter, Anerley	1,660 0 0
J. Jackson, West Ham	1,600 0 0
Nicholls, Wood Green	1,539 0 0
Pizzey, Hornsey	1,525 0 0
Harris, Stratford	1,507 0 0
Freeman, South Hackney	1,499 0 0
Spurgeon, Forest-Gate	1,498 0 0
Impey, Leytonstone	1,486 0 0
Jesse Jackson, Leyton (accepted)	1,444 0 0
Wilson, Lavender Hill	1,395 0 0
Benley (too late), Chiselhurst	1,395 0 0
Perry (too late), Merton	1,298 0 0

For alterations to No. 26, Buckingham Palace-road, for the Albion Bakery Company (Limited). Mr. George Edwards, architect:—

Jay	£694 0 0
Sage	585 0 0
Stimpson & Co.	567 0 0
Reading	500 0 0
Scharien & Williams (accepted)	495 0 0

For extension of the Esplanade, including alteration to skating-rink and swimming-bath, for the Sheerness Local Board. Mr. H. W. Stringfellow, surveyor:—

G. Bligh, Eastchurch	£1,190 0 0
J. Hall, Queenborough (accepted)	1,150 0 0

For the erection of a villa residence at Woodford Green, Essex, for Mr. Geo. Franklin. Mr. W. Doyley, Loughton, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Ranger	£1,533 0 0
Knight	1,370 0 0
Robson	1,365 0 0
Egan	1,345 0 0
Cuthert	1,329 10 0
Wells	1,239 0 0
Holloway	1,169 0 0
Burrage	1,125 0 0

For the erection of a pair of first-class villa residences, Enfield, for Mr. G. J. Summers:—
A. Fairhead, Enfield (accepted, by private contract).

For alterations and additions to No. 51, and 57, Gibbon-road, Nunhead, for Mr. Jabez Smith:—
Eldridge & Gee (accepted).

Accepted for dwelling-house, boundary-walls, and out-offices, &c., at Lockwood, near Huddersfield. Mr. F. Moorhouse, 31, Byram-arcade, Huddersfield, architect:—
W. Sharp, Mold-green (Mason).
W. Buchan, Paddick (Joiner).
Lidster & Armitage, Huddersfield (Plumber and Glazier).
W. E. Jowitt, Huddersfield (Plasterer and Slater).
J. Wood Primrose Hill (Painter).

For taking down and re-building two cottages, Sidney-street, Bethnal Green, for Mr. W. Wooding:—
Parrish & Hawker (accepted).

For the erection of a new church in Packhorse-lane, in the Parish of St. Luke's, Barton Hill, Bristol. Mr. C. F. Hansom, architect. Quantities supplied:—

	Contract No. 1. Nave and Aisles.	Contract No. 2. Chancel and Vestry.
G. Humphreys & Sons	£2,798 0 0	£1,032 0 0
King & Son, Bitton	2,495 0 0	1,335 19 0
Eastabrook & Sons	2,642 0 0	980 0 0
W. Veals	2,680 0 0	940 0 0
Stephens & Bastow	2,517 0 0	917 0 0
W. E. Walters & Son	2,360 0 0	1,040 0 0
Lewis & Edbrooke	2,335 0 0	940 0 0
Messrs. Hatherley	2,446 0 0	874 0 0
Messrs. Howell & Son	2,400 0 0	870 0 0
Messrs. Cowlin & Son	2,389 0 0	849 0 0
R. & S. Davey	2,434 0 0	897 0 0
Wilkins & Sons (accepted)	2,190 0 0	852 0 0
W. C. Pugsley	2,228 0 0	928 0 0
W. Church	2,195 0 0	849 0 0
H. A. Forse	2,264 8 0	785 12 0

For alterations and additions to the Hammersmith Baths. Mr. Roberts, architect:—

Adamson & Sons	£1,090 0 0
Mansell (accepted)	875 0 0

For converting two private houses into shops, at Crown-villas, Forest-hill-road, Honor Oak, for Mr. W. Geary. Mr. A. Birt, architect:—

Stevens	£295 0 0
Watson, Dulwich (accepted)	270 0 0

For constructing the main drainage and outfall works at Sudbury, Wembley, and Alperton, in the parish of Harrow, for the Hendon Union Rural Sanitary Authority. Mr. C. A. Woodbridge, architect. Out of a list of twenty-two tenders the lowest six were:—

Rayner, Liverpool	£14,050 0 0
Stevenson	13,899 0 0
Culpepper, New-cross	13,675 0 0
Felton, Kilburn	13,498 0 0
Ford & Everett, Westminster*	12,900 0 0
Palmer, Birmingham	12,788 0 0

* Accepted.

For constructing Hanwell main drainage and outfall works, for Brentford Union Rural Sanitary Authority. Mr. Christopher J. Clarke, engineer:—

Cook & Co., Battersea	£12,700 0 0
Wm. Crockett, St. Pancras	12,400 0 0
J. W. & J. Neave, Lewisham	11,984 0 0
Corderey & Sons, Gloucester	10,612 0 0
Thomas Adams, Hackney	10,100 0 0
James Dixon, St. Albans	9,940 0 0
Poole, Wimbledon	9,900 0 0
Cardus & Thomas, Acton	9,895 0 0
Gibson, Southall	9,878 0 0
Beadle Bros., Erith	9,837 0 0
Kellett & Bentley, Queen Victoria-street	9,750 0 0
Ford & Everett, Westminster*	9,690 0 0
Palmer, Birmingham	9,321 0 0
Rayner, Liverpool	9,075 0 0
Bottoms Bros., Battersea	8,925 0 0

* Accepted.

For completing twenty-four houses, Evesham-road, West Ham, for Mr. F. D. Dixon-Hartland, M.P. Messrs. Muggeridge & Powell, architects:—

G. & S. Fisher, Camberwell*	£1,987 0 0

* Accepted.

For the erection of a restaurant, No. 6, Green-street, Leicester-square, W.C. Messrs. Benison & Bargman, architects:—

Greenwood	£1,940 0 0
Shepherd	1,917 0 0
Condor	1,880 0 0
Reed	1,861 9 0
Killby	1,843 0 0
Macey	1,840 0 0

For construction of roads and sewers, in laying out the Westside Estate, Clapham Common. Mr. W. Newton Dunn, architect, Nos. 1 & 2, Bucklersbury, Cheapside:—

	No. 1.				No. 2. Extra cost of brick sewer.		
Dierden	£4,047	10	0	...	£1,600	0	0
Botterill	3,289	0	0	...	800	0	0
Adams	3,000	0	0	...	550	0	0
Trueman	2,750	0	0	...	1,000	0	0
Mayo	2,650	0	0	...	1,000	0	0
Titcombe	2,450	0	0	...	350	0	0
Bottoms, Bros.	2,400	0	0	...	800	0	0
Pound	2,203	0	0	...	720	0	0
A. Blake	2,143	0	0	...	882	0	0
Wilson	2,125	0	0	...	870	0	0
Bloomfield	2,101	0	0	...	643	0	0
Armstrong	2,100	0	0	...	2,000	0	0
Pizzey	2,087	0	0	...	994	0	0
Iles	2,071	0	0	...	884	0	0
Beadle Bros.	2,010	0	0	...	675	0	0
Langridge	1,997	0	0	...	984	0	0
Woodham & Fry	1,799	0	0	...	580	0	0
Carter	1,767	0	0	...	2,703	0	0
Neal	1,724	0	0	...	1,936	0	0
Torkington*	1,705	0	0	...	1,906	0	0

* Accepted conditionally on first estimate.

For executing the draining, development of surface, retaining wall subway, unclimbable fencing, &c., in enlarging the cemetery, for the Burial Board, for the Parish of Tottenham. Mr. F. W. Searle, surveyor. Quantities supplied by Messrs. New & Son:—

Contract No. 1.

		If Fir pegs add			If Socket-pipes add		
Meston	£3,040 0 0	£10	10	0	£57	17	4
Bell	2,894 0 0	38	3	6	33	17	8
Taylor	2,884 0 0	12	14	10	33	17	8
Harris & Wardrop	2,690 0 0	22	0	0	33	0	0
Hare	1,970 0 0	25	9	2	67	12	4
Bloomfield*	1,948 13 0	12	14	0	16	18	0

* Accepted.

Contract No. 2.

		Piers, retaining wall, add		
Bloomfield	£460 0 0	£43	10	0
Harris & Wardrop	449 0 0	29	0	0
Linzell	400 0 0	33	0	0
Taylor	359 0 0	36	16	0
Johnson Bros.	366 0 0	17	0	0
Bell	329 13 0	50	0	0
Fairhead (accepted)	329 0 0	33	0	0

Contract No. 3.

Brown	£265 17 6
Bird & Co.	860 0 0
Walls & Co.	744 15 0
Bloomfield	714 0 0
Hernulewicz	698 15 0
Harris & Wardrop	617 0 0
Riding & Son	576 13 0
Rowe	510 0 0
Simpson & Wood	505 6 1
Johnson Bros. (accepted)	482 0 0

Contract No. 4.

Bell	£964 19 0
Meston	857 18 0
Bloomfield	811 0 0
Linzell	800 0 0
Taylor	776 4 0
Johnson Bros.	755 0 0
Harris & Wardrop (accepted)	574 0 0

Contract No. 5.

Taylor	£265 0 0
Meston	224 19 1
Hare	220 0 0
Bell	197 0 0
Harris & Wardrop	196 0 0
Bloomfield (accepted)	165 16 0

For alterations at No. 12, Little Exmouth-street, W.C. for Mr. Mercer. Messrs. Muggeridge & Powell, architects:—

Watson	£249 0 0
Feltham	248 14 0
Burman	235 0 0
Castle	225 0 0
Fisher	209 0 0
G. & T. Riddell (accepted)	190 0 0

For alterations to the Hoop and Toy public-house, South Kensington, for Mr. E. Parish. Mr. E. Jones, architect:—

Jackson & Todd	£246 0 0
Pickersgill	245 0 0
Heath	219 0 0
Scharien & Williams (accepted)	185 0 0

For alterations and additions at the Pilot public house, High-street, Deptford, for Mr. E. J. Rose. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Bywaters & Sons	£2,744 0 0
Staines & Sons	2,284 0 0
Eldridge & Gee	2,100 0 0
B. Wells	2,020 0 0
J. Beale	1,998 0 0
Earl	1,992 0 0
Greenwood & Sons	1,936 0 0
Cox	1,870 0 0
Mills	1,847 0 0
W. Shurmur (accepted)	1,782 0 0

For finishing two houses in Nether-street, Finchley, for Mr. Groome. Messrs. Brooking & Nelson, Barnet, architects:—

Staines	£2,278 0 0!
Ennor Julian & Co.	2,136 0 0
Marriott Bros., Barnet	2,120 0 0
Goodman, Holloway	1,573 0 0
Steed, Camden-town (accepted)	950 0 0!

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